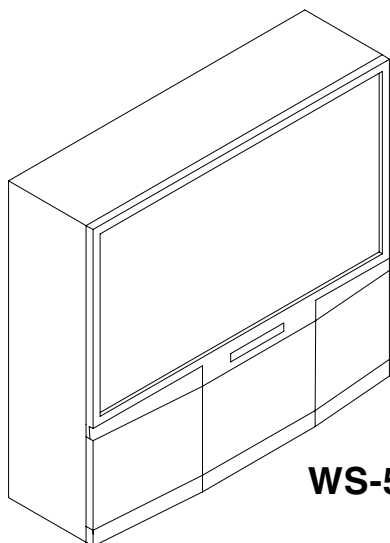




# Service Manual

PROJECTION TELEVISION

V18 / V18+ CHASSIS

**WS-55809**

## V18 MODELS

**WT-46809**  
**WS-55809**  
**WS-65809**

## V18+ MODELS

**WS-55819**  
**WS-65819**

**CAUTION:**

Before servicing this chassis, it is important that the service person read the "SAFETY PRECAUTIONS" and "PRODUCT SAFETY NOTICE" contained in this manual.

## SPECIFICATIONS

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• <b>Power Input</b> : AC 120V, 60Hz</li> <li>• <b>Power Consumption</b> : 280W</li> <li>• <b>Frequency Range</b> : VHF 54 ~ 470MHz<br/>UHF 470 ~ 806MHz</li> <li>• <b>Antenna Input</b> : VHF/UHF 75Ω unbalanced<br/>Single axis input</li> <li>• <b>CRT Size</b> : [7 inches]</li> <li>• <b>High Voltage</b> : 32.0kV (at 0A)</li> <li>• <b>Speaker</b> : [WT-46809 / WS-55809 / WS-65809<br/>5" round type, full range 2 pcs. (8Ω 10W)<br/>[WS-55819 / WS-65819 / WS-73907]<br/>6" round type, full range 2 pcs. (8Ω 10W)</li> <li>• <b>Weight</b> : [WT-46809] 170 lbs<br/>[WS-55809] 250 lbs<br/>[WS-55819] 244.5 lbs<br/>[WS-65809] 323 lbs<br/>[WS-65819] 323 lbs</li> </ul> | <ul style="list-style-type: none"> <li>• <b>Cabinet Dimensions</b> : [Model] (H)x(W)x(D)<br/>[WT-46809] 38.4"x42.8"x27.1"<br/>[WS-55809] 50"x50.6"x26.3"<br/>[WS-55819] 50.4"x50.6"x26.4"<br/>[WS-65809] 61.8"x58.7"x28.1"<br/>[WS-65819] 61.8"x58.8"x28.1"</li> <li>• <b>Input Level</b> : VIDEO IN JACK (RCA Type)<br/>1.0Vp-p 75Ω unbalanced<br/>AUDIO IN JACK (RCA Type)<br/>-4.7dBm 43kΩ unbalanced<br/>S-VIDEO IN JACK<br/>(Y/C separate type)<br/>Y: 1.0 Vp-p C: 0.286Vp-p (BURST)<br/>75Ω unbalanced<br/>DVD / Y, Cr, Cb (RCA Type)<br/>Y: 1.0 Vp-p Cr, Cb: 700mVp-p<br/>ATV / Y(G), Pr(R), Pb(B), H, V<br/>Y: 1.0Vp-p with sync 75Ω (BNC)<br/>Pr, Pb: 700mV 75Ω<br/>H, V: 3.0Vp-p 75Ω</li> <li>• <b>Output Level</b> : VIDEO OUT JACK (RCA Type)<br/>1.0Vp-p 75Ω unbalanced<br/>AUDIO OUT JACK (RCA Type)<br/>-4.7dBm 4.7kΩ unbalanced</li> </ul> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

- Weight and dimensions shown are approximate.
- Design specifications are subject to change without notice.

## MITSUBISHI DIGITAL ELECTRONICS AMERICA, INC.

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## INTRODUCTION

This service manual provides service instructions for PTV Models WT-46809, WS-55809 and WS-65809 which use the V18 chassis, and PTV Models WS-55819, and WS-65819 which use the V18+ chassis. Service personnel should read this manual thoroughly before servicing these chassis.

This service manual includes:

1. Assembly and disassembly instructions for the front and rear cabinet components.
2. Servicing of the Lenticular Screen and Fresnel Lens.
3. Servicing printed circuit boards (PCBs).
4. CRT replacement procedure.
5. Electrical adjustments.
6. Chip parts replacement procedures.
7. Circuit path diagrams.

The parts list section of this service manual includes:

1. Cabinet and screen parts.
2. Electrical parts.

Schematic and block diagrams of the above listed models are included in this service manual for better understanding of the circuitry. PCB drawings are also included for easy location of parts and test points.

## PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in television receivers have special safety related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc.

Replacement parts which have special safety characteristics are identified in this service manual.

Electrical components having such features are identified by shading  on the schematic diagram and by **bold type** in the parts list of this service manual. **The replacement for any safety part should be identical in value and characteristics.**

## **SAFETY PRECAUTIONS**

**NOTICE:** Observe all cautions and safety related notes located inside the receiver cabinet and on the receiver chassis.

**WARNING:**

1. Operation of this receiver outside the cabinet or with the cover removed presents a shock hazard from the receiver's power supplies. Work on the receiver should not be attempted by anyone who is not thoroughly familiar with the precautions necessary when working on high voltage equipment.
2. Do not install, remove or handle the picture tubes in any manner unless shatterproof goggles are worn. People not so equipped should be kept away while the picture tube is being handled. Keep the picture tube away from the body while handling.
3. When service is required, observe the original lead dress. Extra precaution should be taken to assure correct lead dress in the high voltage area. Where a short-circuit has occurred, replace those components that indicate evidence of overheating.

**X-Radiation warning**

The surface of the cathode ray tubes (CRTs) may generate X-Radiation, so take proper precautions when servicing. It is recommended that a lead apron be used for shielding while handling the CRT. Use this method if possible.

When replacing the CRTs, use only the designated replacement part since it is a critical component with regard to X-Radiation. High voltage must be set as prescribed under the section titled Electrical Adjustments.

**Leakage current check**

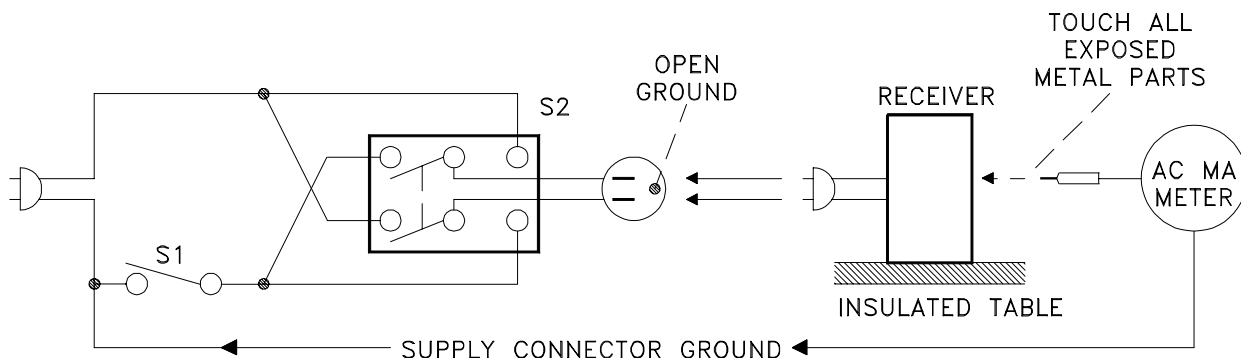
Before returning the receiver to the customer, it is recommended that leakage current be measured according to the following methods.

**1. Cold Check**

With the alternating current (AC) plug removed from the AC source, place a jumper across the two AC plug prongs. Connect one lead of an ohm meter to the AC plug and touch the other lead to each exposed metal part (i.e. antennas, handle bracket, metal cabinet, screw heads, metal overlay, control shafts, etc.), particularly any exposed metal part that has a return path to the chassis. The resistance of the exposed metal parts having a return path to the chassis **should be a minimum of 1 Mega Ohm**. Any resistance below this value indicates an abnormal condition and requires corrective action.

**2. Hot Check ...Use the circuit shown below to perform the hot check test.**

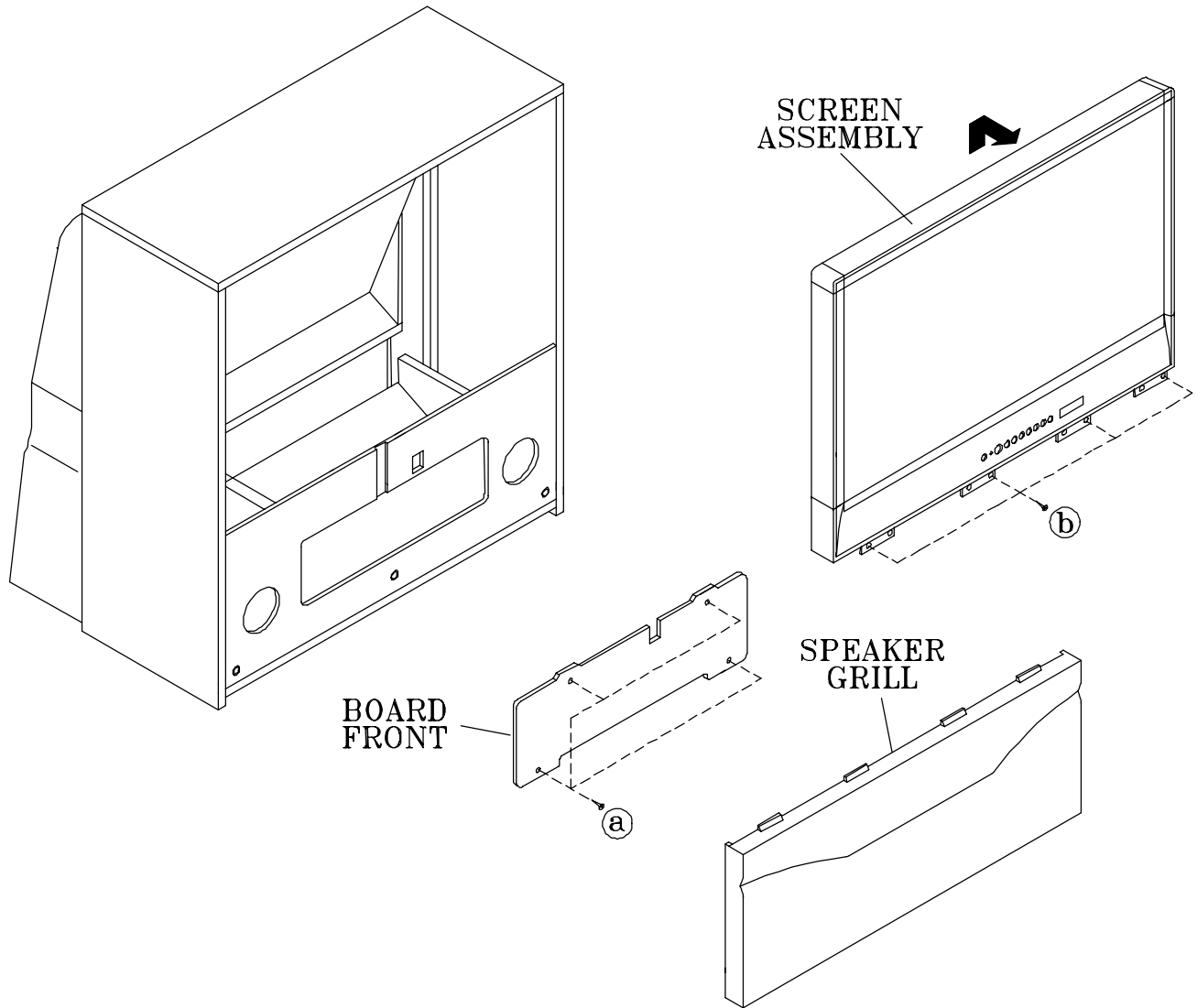
1. Keep switch S1 open and connect the receiver to the measuring circuit. Immediately after connection, and with the switching devices of the receiver in their operating positions, measure the leakage current for both positions of switch S2.
2. Close switch S1, energizing the receiver. Immediately after closing switch S1, and with the switching devices of the receiver in their operating positions, measure the leakage current for both positions of switch S2. Repeat the current measurements of items 1 and 2 after the receiver has reached thermal stabilization. **The leakage current must not exceed 0.5 milliampere (mA).**



## CABINET DISASSEMBLY (FRONT VIEW)

WT-46809

\*Refer to the Parts List for Part Numbers



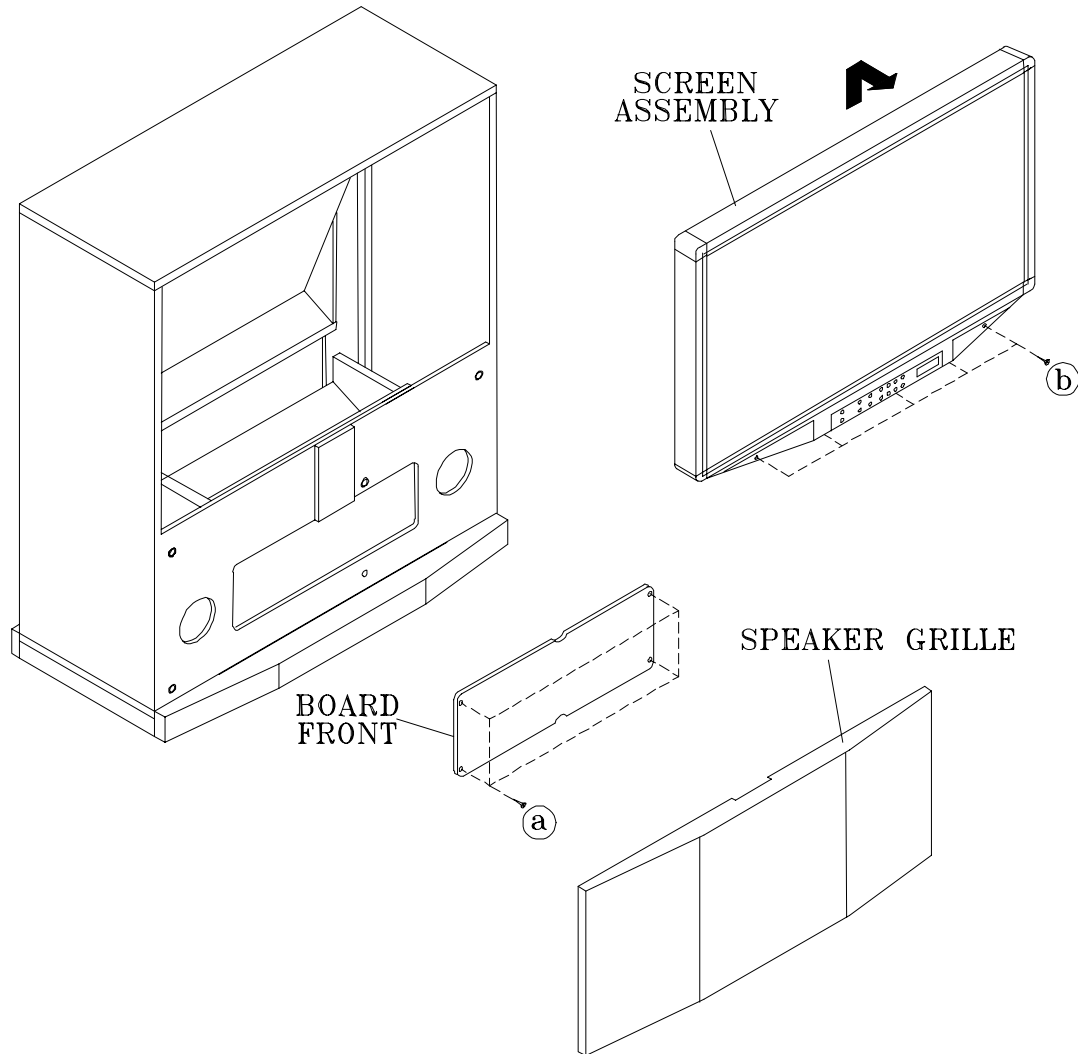
### **1a. Front Cabinet Disassembly**

1. Remove the Speaker Grille by pulling forward.
2. Remove the Board Front by removing 4 screws (a).
3. Remove the 4 screws (b) holding the Screen Assembly.
4. Lift the Screen Assembly up and away from the cabinet.

## **CABINET DISASSEMBLY (FRONT VIEW)**

**WS-55809 / WS-65809**

**\*Refer to the Parts List for Part Numbers**



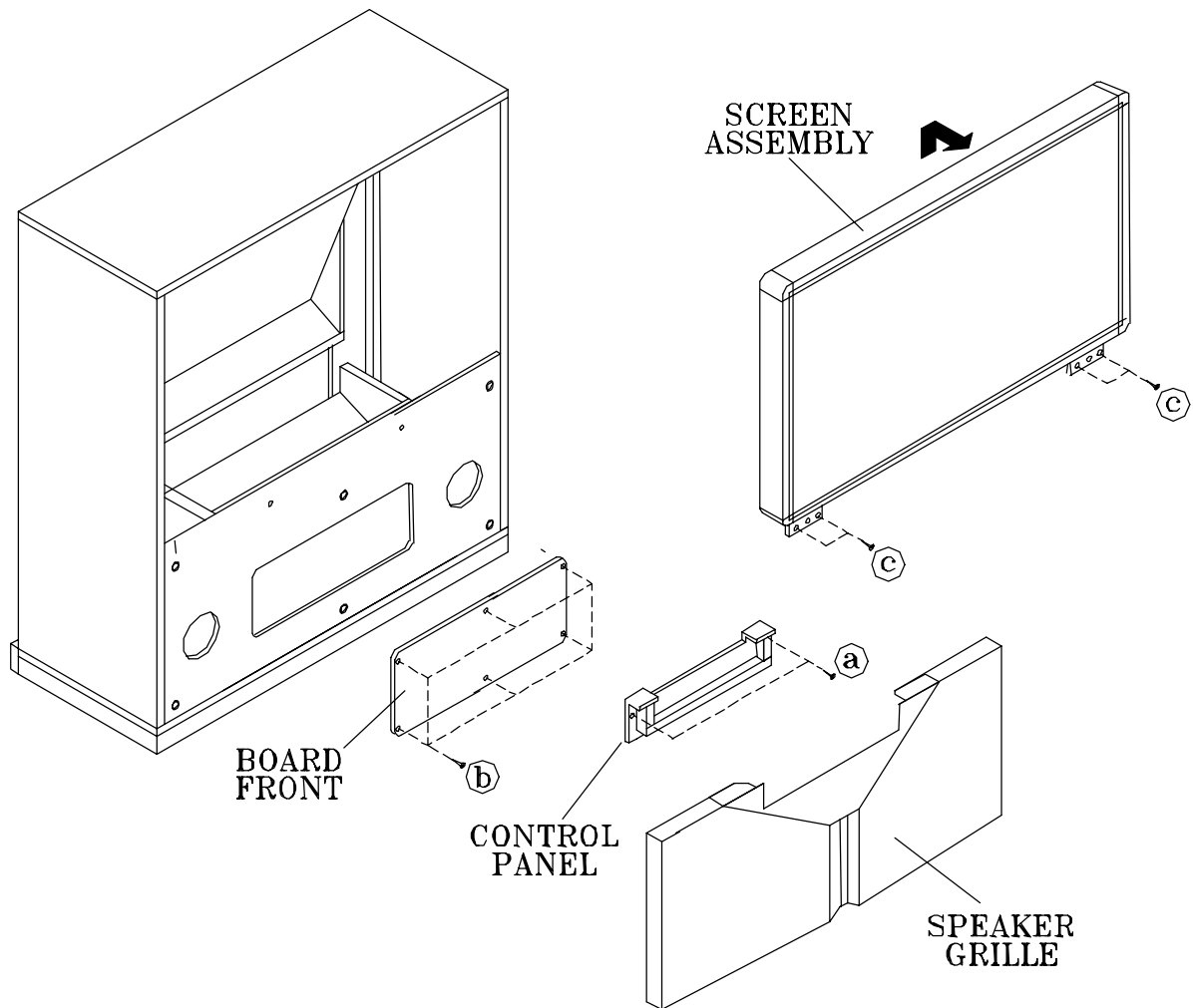
### ***1b. Front Cabinet Disassembly***

1. Remove the Speaker Grille by pulling forward.
2. Remove the Board Front by removing 4 screws (a).
3. Remove the 5 screws (b) holding the Screen Assembly.
4. Lift the Screen Assembly up and away from the cabinet.

## **CABINET DISASSEMBLY (FRONT VIEW)**

**WS-55819 / WS-65819**

**\*Refer to the Parts List for Part Numbers**



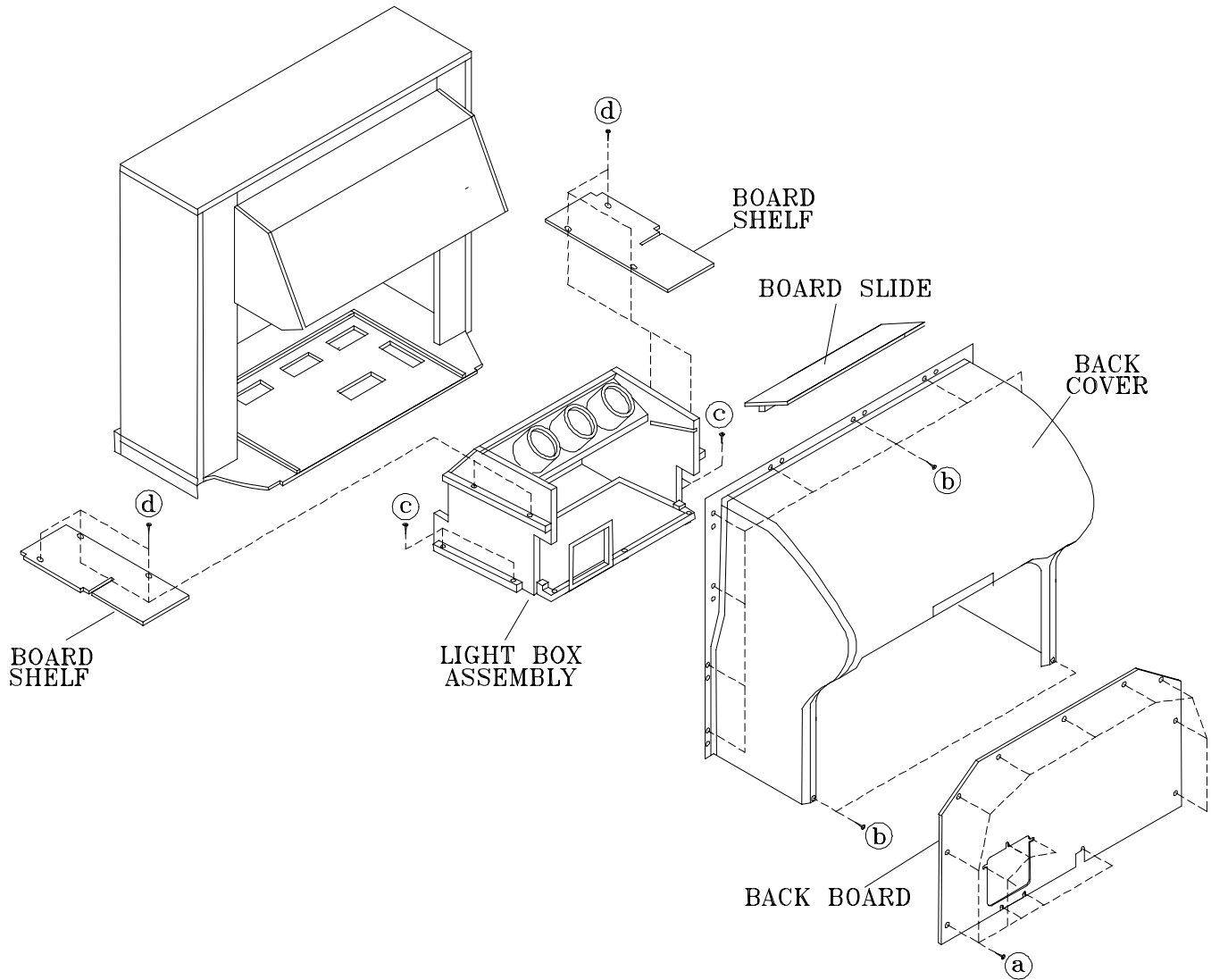
### ***1c. Front Cabinet Disassembly***

1. Remove the Speaker Grille by pulling forward.
2. Remove 2 screws (a) to remove the Control Panel.
3. Remove the Board Front by removing 4 screws (b).
4. Remove the 4 screws (c) holding the Screen Assembly.
5. Lift the Screen Assembly up and away from the cabinet.

## **CABINET DISASSEMBLY (REAR VIEW)**

### **WT-46809**

**\*Refer to the Parts List for Part Numbers**



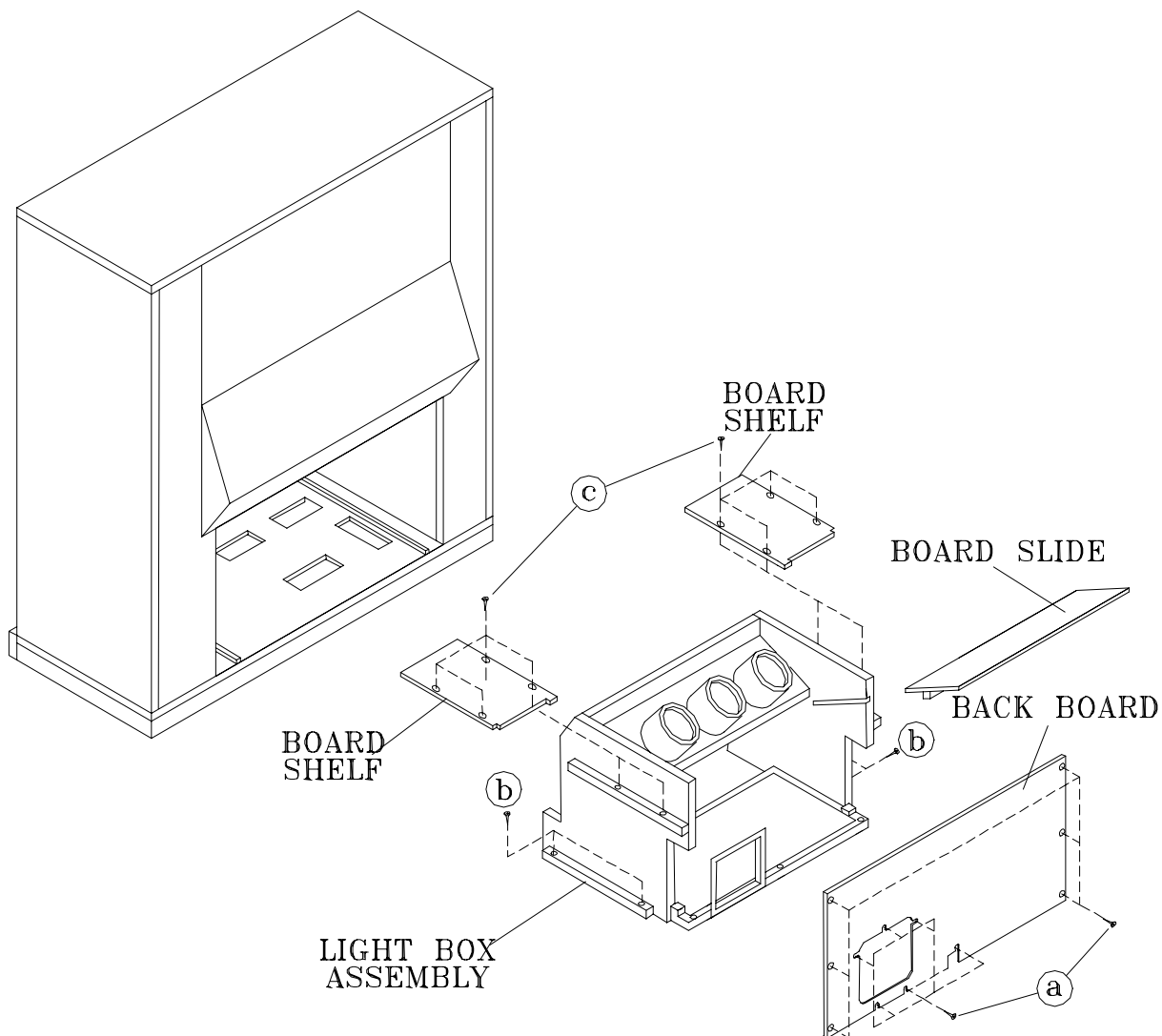
### **2a. Rear Cabinet Disassembly**

1. Remove 15 screws (a) holding the Back Board.
2. Remove the 13 screws (b) holding the Back Cover.
3. Remove the 3 screws (d) securing each Board Shelf.
3. Remove the 4 screws (c) securing the Light Box Assembly.
4. Slide the Light Box out the rear of the Cabinet.

## **CABINET DISASSEMBLY (REAR VIEW)**

**WS-55809 / WS-55819 / WS-65809 / WS-65819**

\*Refer to the Parts List for Part Numbers



### 2b. Rear Cabinet Disassembly

1. Remove 12 screws (a) holding the Back Board.
2. Remove the 4 screws (c) holding each Board Shelf.
3. Remove the 4 screws (b) securing the Light Box Assembly.
4. Slide the Light Box out the rear of the Cabinet.

## **SERVICING THE LENTICULAR SCREEN AND FRESNEL LENS**

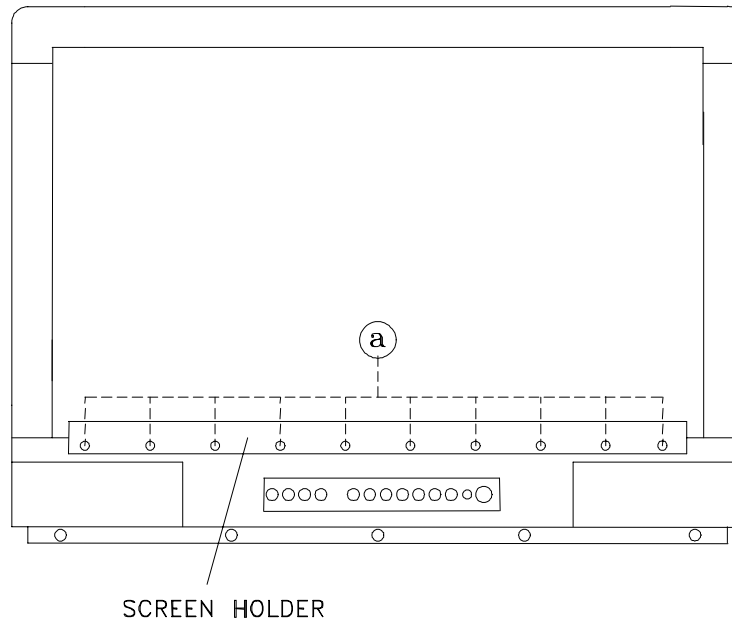
**CAUTION:** **Wear gloves** when handling the Lenticular Screen and Fresnel Lens.  
This prevents cuts and finger prints. **Do not place Fresnel Lens in the sun.**  
This may cause fire and heat related injuries.

### **WT-46809 / WS-55809 / WS-65809**

#### **1a. Lenticular Screen and Fresnel Lens Removal**

1. Remove the screen assembly shown in the Cabinet Disassembly procedure.
2. Remove the screws (a) securing the Screen Holder.
3. Slide the Lenticular Screen and Fresnel Lens from the Screen Frame.

**Note:** When separating the Lenticular Screen from the Fresnel Lens, use caution while prying the Screen and Lens apart. Use a slot type screw drive, and remove the pressure sensitive double sided tape.



## **SERVICING THE LENTICULAR SCREEN AND FRESNEL LENS**

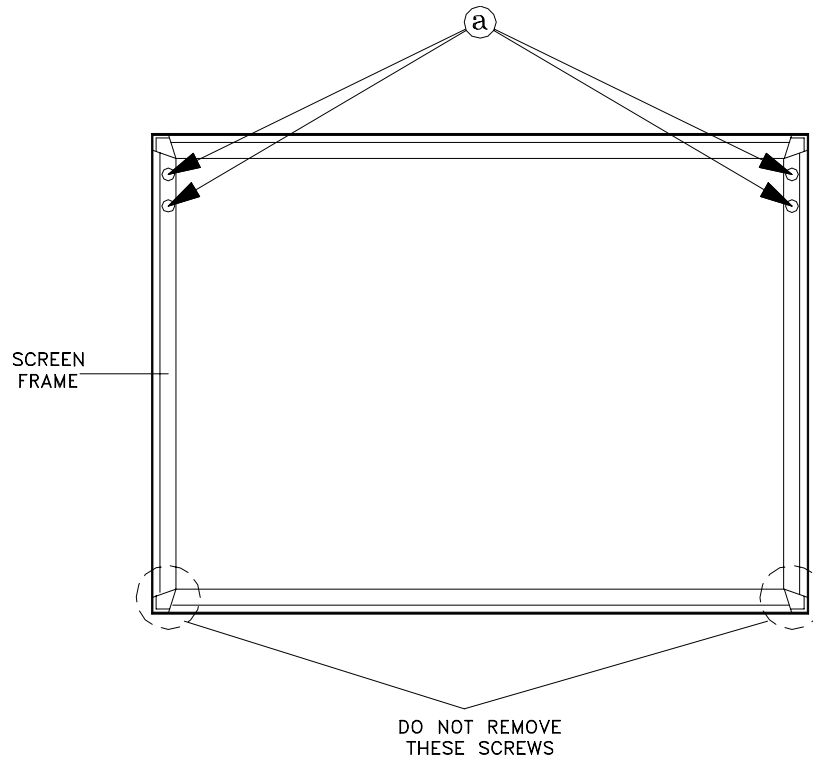
**CAUTION:** **Wear gloves** when handling the Lenticular Screen and Fresnel Lens. This prevents cuts and finger prints. **Do not place Fresnel Lens in the sun.** This may cause fire and heat related injuries.

### **WS-55819 / WS-65819**

#### **1a. Lenticular Screen and Fresnel Lens Removal**

1. Remove the screen assembly shown in the Cabinet Disassembly procedure.
2. Remove the Screen Frame top section by removing 4 screws (a).
3. Carefully grasp the Lenticular Screen and Fresnel Lens combination and pull upward and out of the Screen Frame Assembly.

**Note:** When separating the Lenticular Screen from the Fresnel Lens, use caution while prying the Screen and Lens apart. Use a slot type screw drive, and remove the pressure sensitive double sided tape.

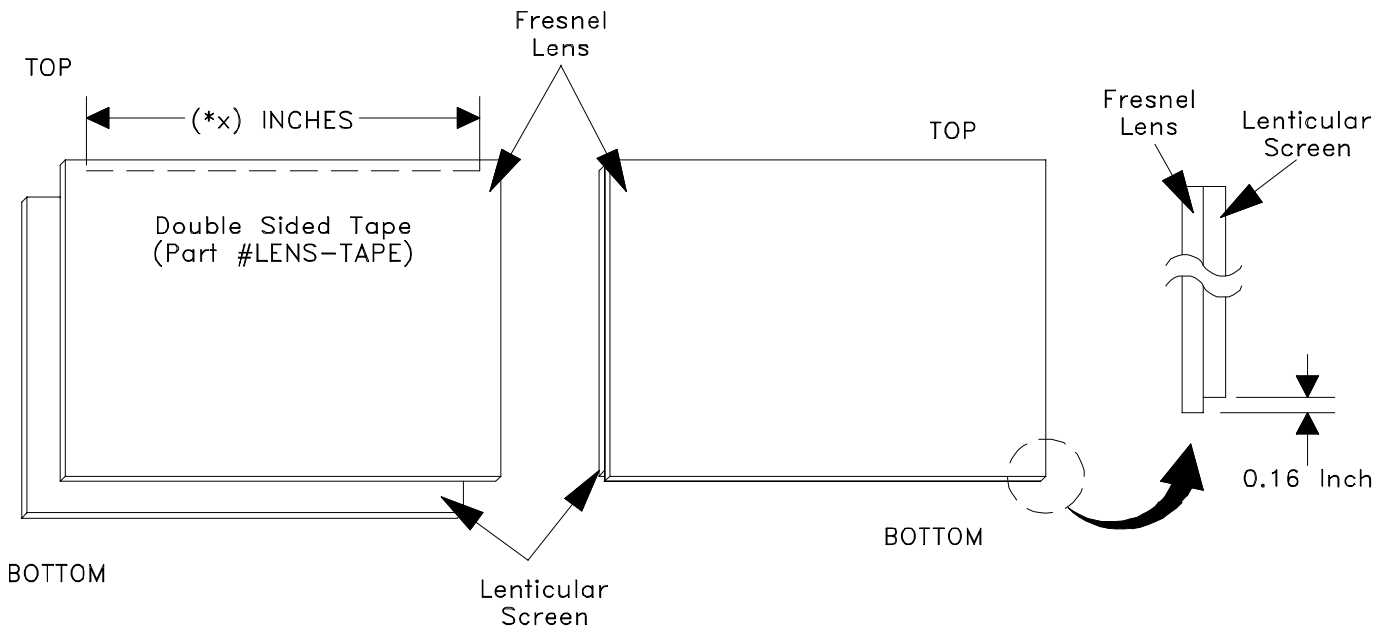


## SERVICING THE LENTICULAR SCREEN AND FRESNEL LENS

### 2. Lenticular Screen and Fresnel Lens Installation.

**Note:** Store the Lenticular Screen and Fresnel Lens in a cool dry place. High humidity may deform the Lenticular Screen and Fresnel Lens.

1. Apply double coated tape (Part # LENS-TAPE) along the top front edge of the Fresnel Lens as shown below. Refer to the Table below for proper tape length.
2. Place the Fresnel Lens on top of the Lenticular Screen and apply pressure at the top edge to bond them together as shown below.



| Model    | Screen Size | Tape Length |
|----------|-------------|-------------|
| WT-46809 | 46"         | 40"         |
| WS-55809 | 55"         | 47.8"       |
| WS-55819 | 55"         | 47.8"       |
| WS-65809 | 65"         | 56.5"       |
| WS-65819 | 65"         | 56.5"       |

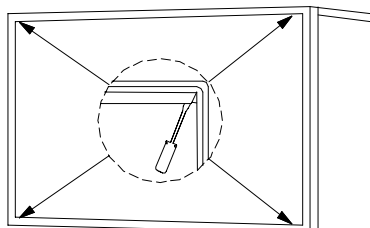
## SERVICING THE DIAMONDSHIELD™

### 1. DiamondShield™ Removal Procedure

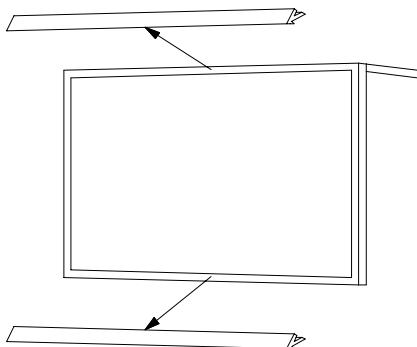
The location of the DiamondShield™ molding clips varies between models, top and bottom, or sides. Use the appropriate disassembly procedure given below.

**Note:** *Wear gloves when handling the DiamondShield™ to prevent finger prints.*

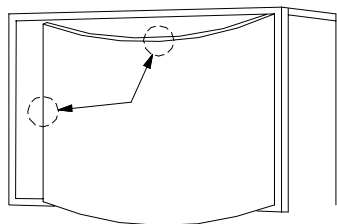
#### Top & Bottom Molding Clips



1. Gently insert a small screwdriver between the DiamondShield™ and one end of the clip to pry the clip loose.

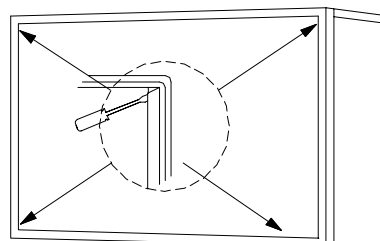


2. Remove both clips by pulling them toward you.

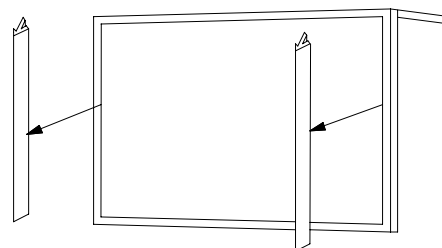


3. Carefully insert a small screwdriver into the gap at the top/center point of the Shield and pull the Shield slightly away from the unit. Place your hands at the points shown and gently bow the Shield toward you and remove from the unit. Then re-install the two clips.

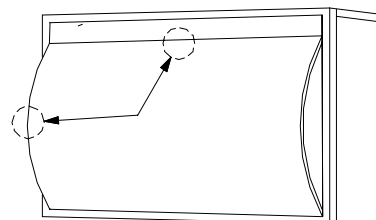
#### Side Molding Clips



1. Gently insert a small screwdriver between the DiamondShield™ and one end of the clip to pry the clip loose.



2. Remove both clips by pulling them toward you.



3. Carefully insert a small screwdriver into the gap at the side/center point of the Shield and pull the Shield slightly away from the unit. Place your hands at the points shown and gently bow the Shield toward you and remove from the unit. Then re-install the two clips.

### 2. DiamondShield™ Installation Procedure

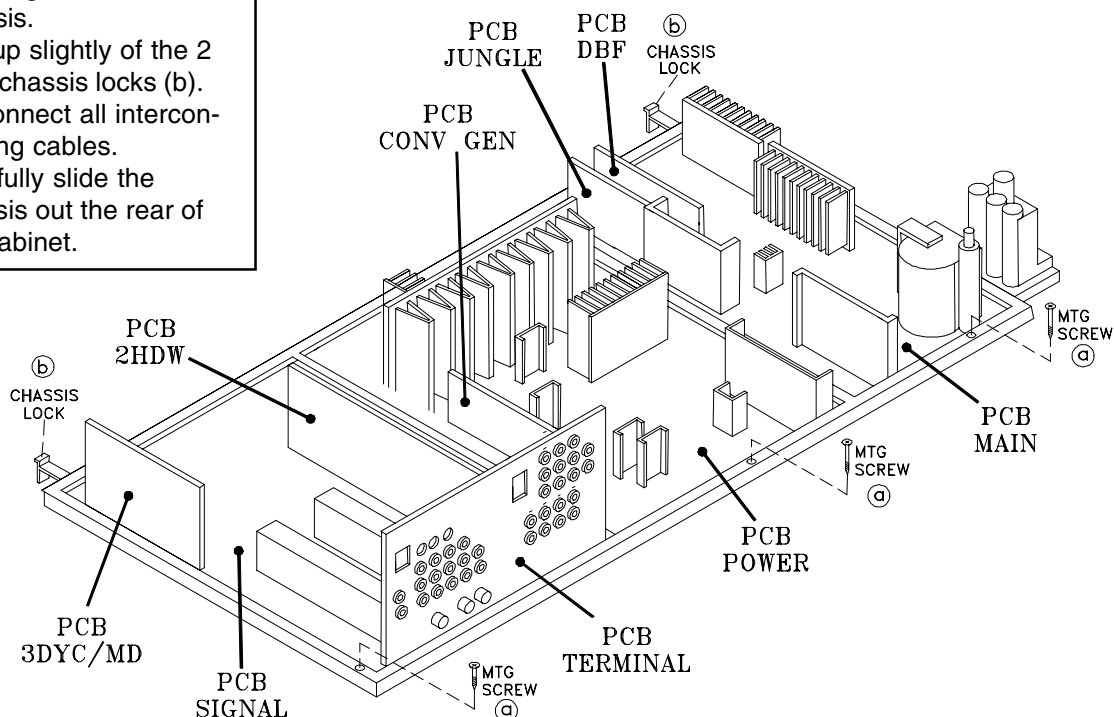
\*(See the Parts List for DiamondShield™ part numbers)

To install the DiamondShield™, reverse the above Removal Procedure.

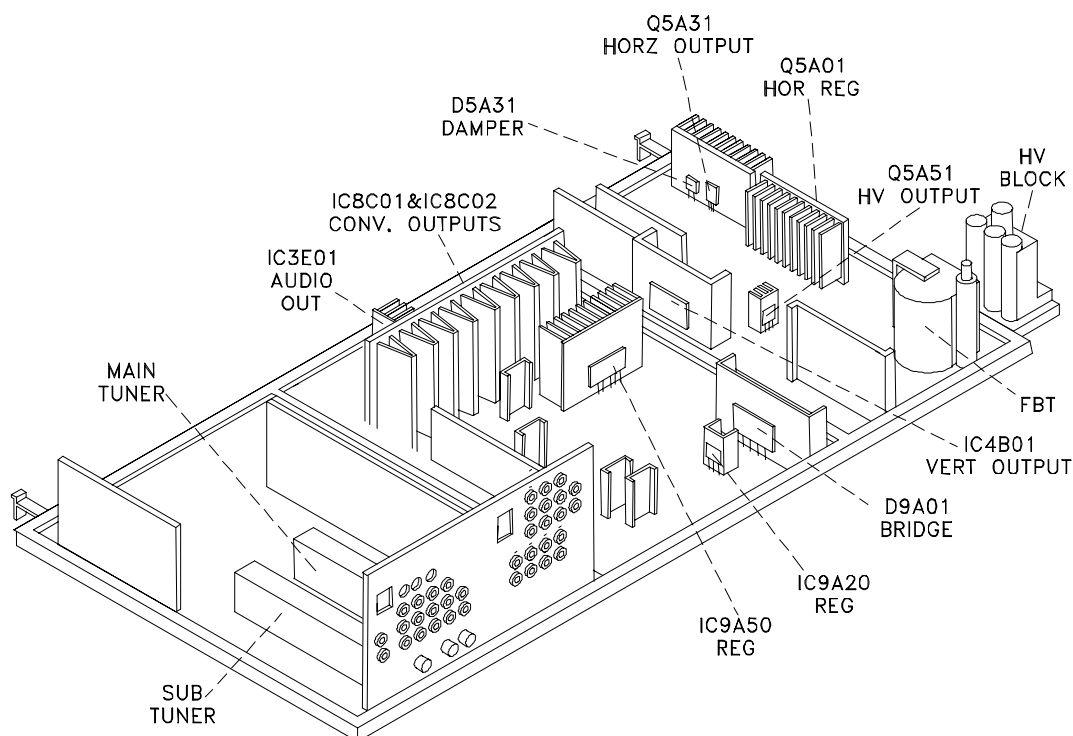
## PCB Locations and Chassis Removal

### Chassis Removal

- 1) Remove the 3 screws (a) securing the rear of the chassis.
- 2) Pull up slightly of the 2 front chassis locks (b).
- 3) Disconnect all interconnecting cables.
- 4) Carefully slide the chassis out the rear of the cabinet.



## Main Components Location



## CRT REPLACEMENT

### 1. Removal of the CRT

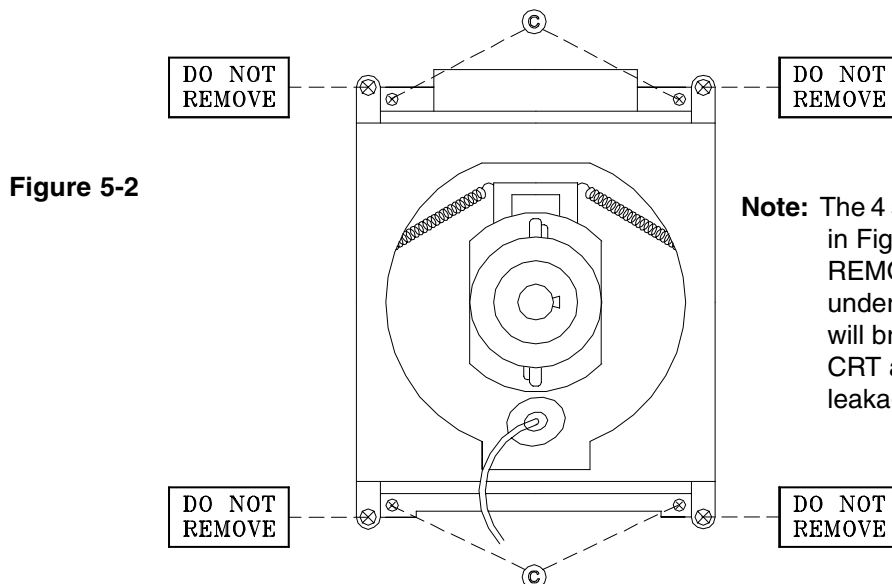
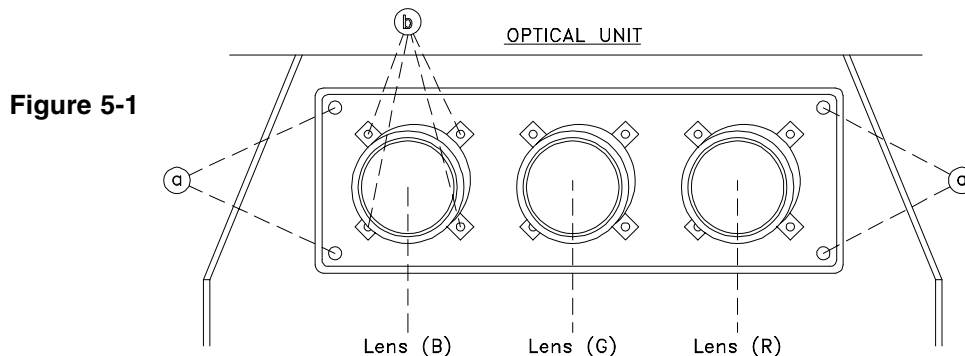
**Caution!** High voltage should be completely discharged prior to CRT removal. Since The CRTs receive high voltage from the HV Block, discharge by shorting the open end of the respective high voltage cable to chassis ground.

**Note:** Refer to the Cabinet Disassembly Procedures when performing steps 1 through 4.

1. Remove the Speaker Grille, Front Board, and Screen Assy.
2. Remove the Back Board.
3. Remove the Anode Lead Wire from the CR Block.
4. Remove the PCB-CRT.
5. Remove 4 hex-screws "a" retaining the Optical Unit. [Figure 5-1]
6. Remove 4 screws "b" retaining the Lens.

**Note:** **DO NOT loosen the RED screws.** Doing so will break the seal between the C-Element and the # 6 Lens, causing leakage of the CRT Coolant.

7. Remove 4 screws "c" retaining the CRT. [Figure 5-2]
8. Remove the Deflection Yoke from the neck of the CRT. [Figure 5-7]



**Note:** The 4 spring-loaded screws shown in Fig 5-2 and labeled as "DO NOT REMOVE", should not be loosened under any circumstance. Doing so will break the seal between the CRT and the CRT-Spacer, causing leakage of the CRT Coolant.

## 2. Installation of the CRT

**Note:** The replacement CRT is supplied as an assembly comprised of the CRT and the Inner Lens with the space between them filled with ethylene glycol. Care should be taken during handling and installation to prevent shock from disrupting the seal or alignment between the CRT and Inner Lens. [Figure 5-3]

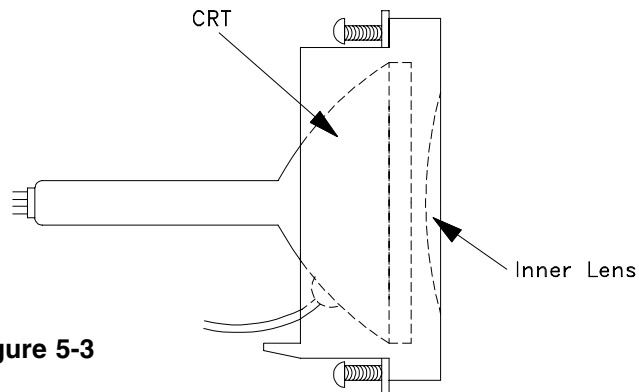


Figure 5-3

**Note:** The CRT fixing screws should not be loosened nor should they be removed. [Figure 5-4]

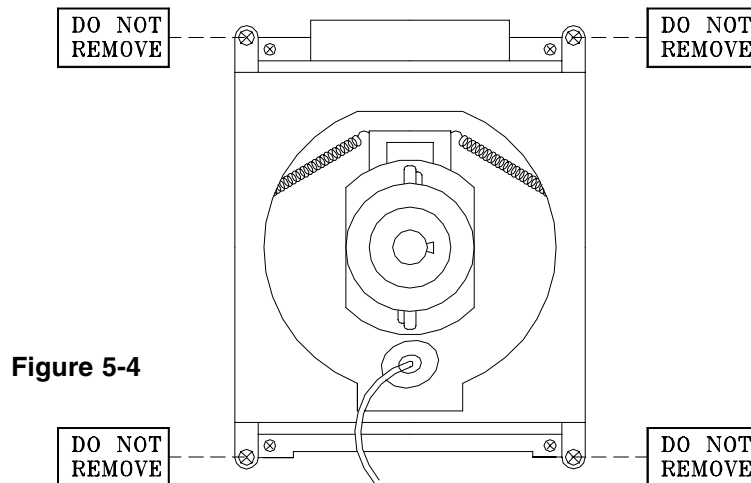


Figure 5-4

1. Carefully position the replacement CRT and fasten in place using 4 screws "d". [Figure 5-6]

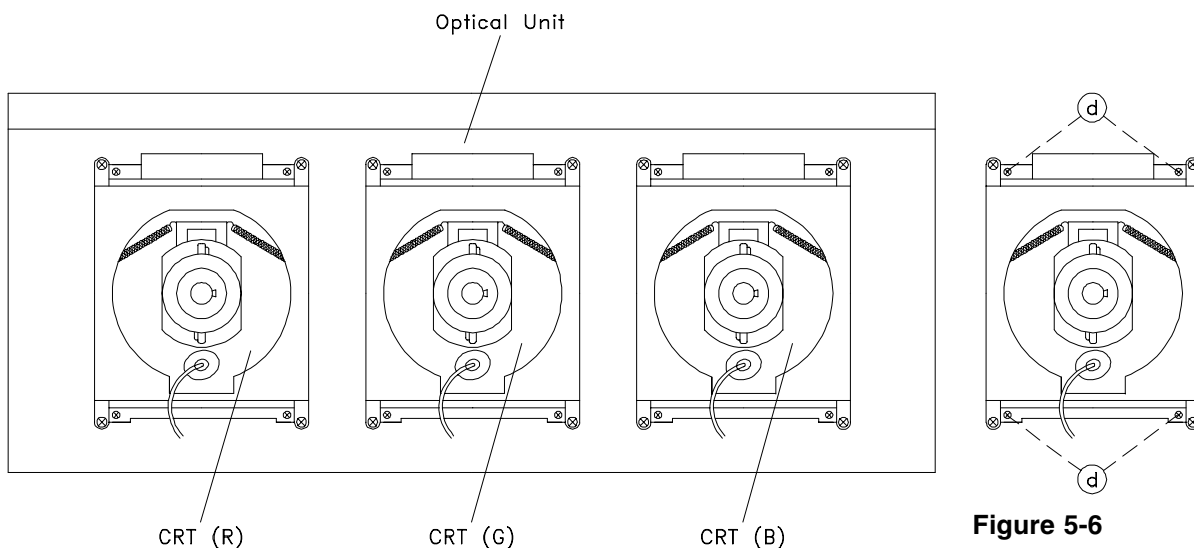


Figure 5-6

Figure 5-5

2. Install the Deflection Yoke on the CRT neck. [Figure 5-7]
3. Install the Lens that was removed in steps 8 and 9 of Removal Of The CRT. [ Figures 5-1 and 5-2 ]
  - a) Position the Lens so that the Label faces the direction shown in Figure 5-8.
  - b) Install the mounting screws. [Figure 5-1]
4. Connect the PCB-CRT.
5. Insert the Optical Unit into the Light Box Assembly.
6. Insert the Anode Lead Wire into the Flyback Transformer.
7. Re-clamp the Lead Wire in its original position.

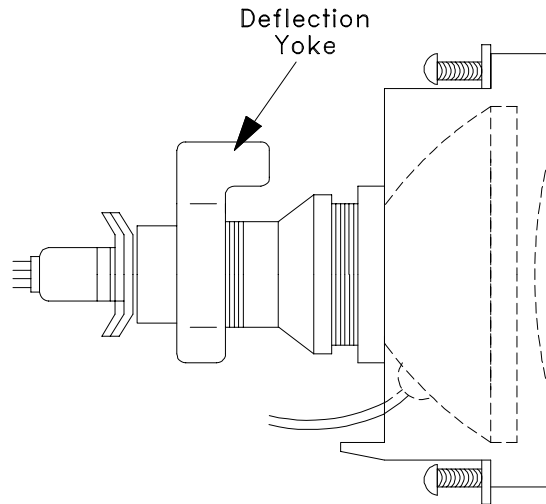


**Figure 5-7**

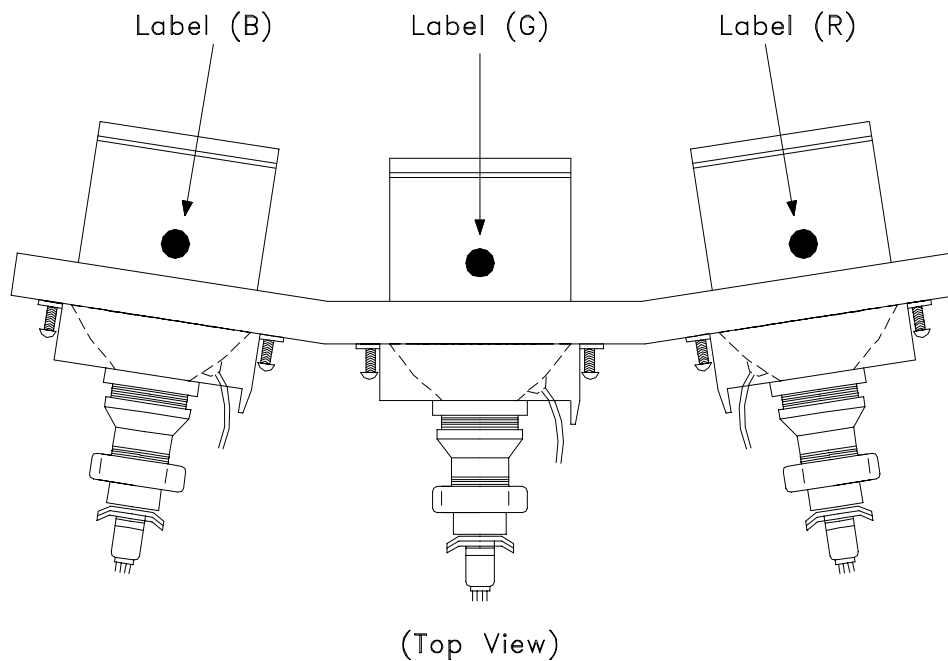


**Figure 5-8**

**Adjustment procedures after replacing the CRT(s)**

- CRT Cut Off / White Balance Adjustment
- Static Convergence Adjustment
- Dynamic Convergence Adjustment

## ELECTRICAL ADJUSTMENTS

**Note:** Perform only the adjustments required.  
Do not attempt an alignment if proper equipment is not available.

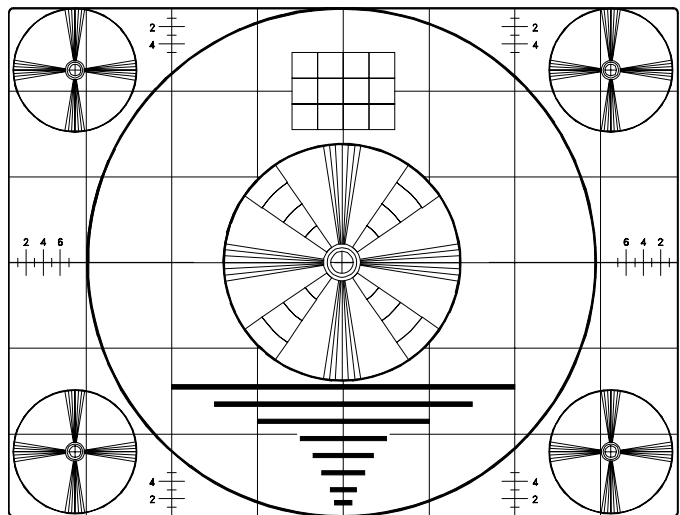
### 1. Test Equipment

- Oscilloscope (Unless otherwise specified, use 10:1 probes)
- Signal Generator (both SD and HD capable)
- Frequency Counter
- Direct Current Voltmeter
- Direct Current Power Supply
- Multiplex Audio Signal Generator
- Direct Current Ampere Meter

### 2. Test Signal

#### A. Monoscope Signal

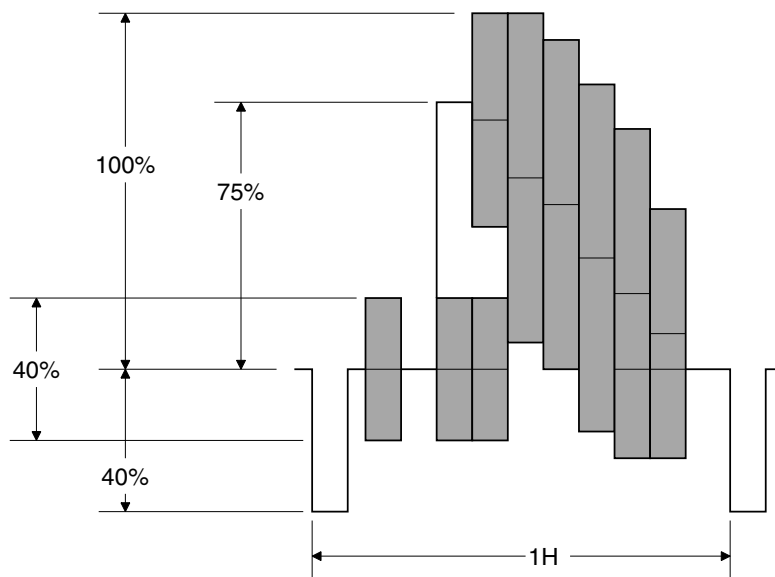
**Note:** If you do not have a monoscope signal source, connect the unit to a VCR and play a Monoscope \*alignment tape.  
(\* Part Number: 859C568060)



**Monoscope Signal**

#### B. Color Bar Signal

Use the color bar signal shown below, unless otherwise specified in this manual.



**Split-Field Color Bars (100% window)**

### 3. Initial Setup

#### A. Option Menu Setup

Follow the steps below for the initial set-up:

1. Select the "MENU" display by pressing the "MENU" button once.
2. Press the number buttons "0", "1", "7", "0" in sequence to select the "OPTION MENU" display.
3. Press the "ADJUST" button to select "INITIAL."
4. Press "ENTER."

**NOTE:** At this time channel 3 is automatically selected.

(MENU-0-1-7-0)

| OPTION MENU   |       |
|---------------|-------|
| Initial       |       |
| Power restore | :OFF  |
| DTV Port      | :Auto |

#### B. Default Settings

##### MAIN MENU DEFAULT SETTINGS

| SETUP                  |           | CHANNEL EDIT        |          | ADVANCED FEATURES     |              |
|------------------------|-----------|---------------------|----------|-----------------------|--------------|
| Memorize Channels      | ANT A     | Input               | ANT A    | SD Video Format       | 480P         |
| Language               | English   | Channel             | 3        | Video Mute            | On           |
| CLOCK                  |           | Memory              | Deleted  | Black Level Expansion | On           |
| Clock Setting          | Auto      | Name                | N/A      | AUDIO SETTINGS        |              |
| Time Zone              | Eastern   | SQV                 | N/A      | Volume                | 30%          |
| Daylight Savings       | Applies   | TIMER               |          | Bass                  | 50%          |
| Clock Time             | N/A       | Timer               | Off      | Treble                | 50%          |
| Set Day                | N/A       | Set Time            | 12:00PM  | Balance               | 50%          |
| AV CONNECTION          |           | Set Day             | Everyday | Surround              | Off          |
| AV Network             | OFF       | Input               | ANT A    | Listen to             | Stereo       |
| External Audio System  | NO        | Channel             | 3        | Level Sound           | Off          |
| AV Receiver at Input 1 | None      | V-CHIP PARENT LOCK  |          | VIDEO SETTINGS        |              |
| Audio Output           | Variable  | V-CHIP              | Off      | Iris                  | Off          |
| INPUT ASSIGNMENT       |           | TV Rating           | TV-PG    | Contrast              | 100%         |
| Antenna A              | On        | FV-Fantasy Violence | Allow    | Brightness            | 50%          |
| Antenna B              | On        | D-Sexual Dialog     | Allow    | Sharpness             | 50%          |
| DTV                    | YPrPb     | L-Adult Language    | Allow    | Color                 | 50%          |
| Input 1                | Input-1   | S-Sexual Situation  | Allow    | Tint                  | 50%          |
| Input 2                | Input-2   | V-Violence          | Allow    | Color Temp.           | High         |
| Input 3                | Input-3   | Program not Rated   | Allow    | Video Noise           | Standard     |
| Input 4                | Input-4   | Movie Rating        | PG       | Image Type            | Video        |
| Component 1            | Comp. 1   | V-CHIP LOCK BY TIME |          | PIP/POP               |              |
| component 2            | Comp. 2   | V-Chip Start Time   | 12:00 AM | Source                | Ant A Ch 3   |
| CAPTIONS               |           | V-Chip Stop Time    | 12:00 AM | PIP Position          | Lower Right  |
| Closed Captions        | With Mute | Lock by Time        | Off      | POP Position          | Right Half   |
| CC Background          | Gray      | Lock Time           | N/A      | Format                | Stretched    |
|                        |           | Unlock Time         | N/A      | PIP/POP Format        | Dble. Window |

##### A/V RESET DEFAULT SETTINGS (By Input)

| A/V Memory  | ANT-A/B  | DTV      | INPUTS 1-4 | DVD-1/2  |
|-------------|----------|----------|------------|----------|
| Iris        | OFF      |          |            |          |
| Contrast    | Max.     | Max.     | Max.       | Max.     |
| Brightness  | Center   | Center   | Center     | Center   |
| Sharpness   | Center   | Center   | Center     | Center   |
| Color       | Center   | Center   | Center     | Center   |
| Tint        | Center   | Center   | Center     | Center   |
| Color Temp. | High     | High     | High       | High     |
| Video Noise | Standard | Standard | Standard   | Standard |
| Image Type  | Video    | Video    | Video      | Video    |
| Bass        | Center   | Center   | Center     | Center   |
| Treble      | Center   | Center   | Center     | Center   |
| Balance     | Center   | Center   | Center     | Center   |
| Surround    | OFF      | OFF      | OFF        | OFF      |
| Listen To   | Stereo   | N/A      | N/A        | N/A      |
| Level Sound | OFF      | OFF      | OFF        | OFF      |

### C. A/V Memory

Each of the external inputs has its' own Audio/Video Memory. A change in an A/V setting at a specific input is stored in memory for that specific input.

#### A/V Reset

1. The front panel AV Reset button initializes all A/V Memories.
2. The AV Reset in the user's menu initializes only the selected input's A/V Memory.

## 4. LED Indicator Diagnostics

The "Power ON LED" provides an indication of the sets operation, and the possible cause of a malfunction.

### 1. Initial Control Circuitry Check

Immediately after the TV is connected to an AC power source:

- The LED flashes three times ... indicating the Microprocessor has initialized and is functioning properly.
- If the LED does not flash ... the Microprocessor is NOT functioning.

### 2. Error Code Operational Check

Pressing the front panel "INPUT" and "MENU" buttons at the same time, and holding for 5 seconds, activates the Error Code Mode. The LED flashes denoting a two digit Error Code, or indicating no problem has occurred since the last Initialization.

**Note:** The front panel buttons must used, NOT those on the Remote Control.

- The number of flashes indicates the value of the MSD (tens digit) of the Error Code.
- The flashing then pauses for approximately 1/2 second.
- The LED then flashes indicating the value of the LSD (ones digit) of the Error Code.
- The Error Code is repeated a total of 5 times.

Example: If the Error Code is "24", the LED will flash two times, pause, and then flash four times.

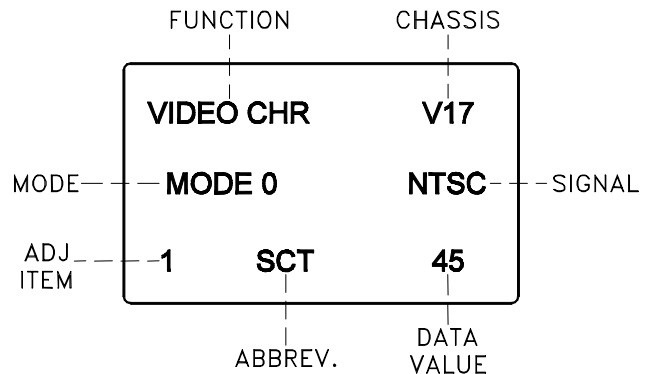
### 3. Error Codes

The Error Code designations indicating a malfunction, or no malfunction, are listed below:

- "12" ... indicates no error has occurred.
- "21" ... X-Ray Protect circuit.
- "22" ... Short Protect circuit.
- "23" ... Horizontal Deflection failure.
- "24" ... Vertical Deflection failure.

## 5. Circuit Adjustment Mode

Most of the adjustments can only be performed using the remote hand unit. Many of the adjustments must be performed in both the NTSC and HD modes. Video/Color adjustments must be performed in the NTSC and HD modes, and data must be preset in the 480P (DVD) and VGA modes.

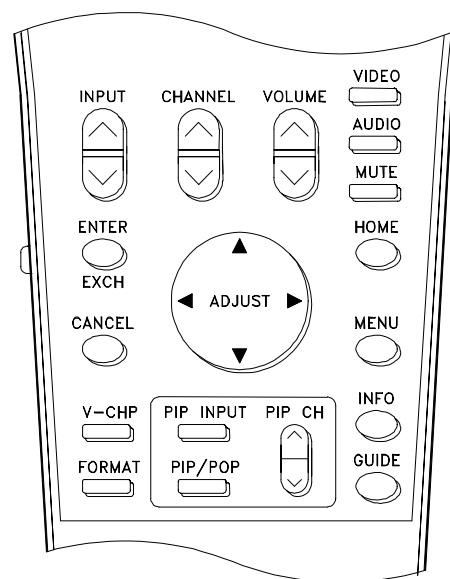


### A. Activating the Circuit Adjustment Mode

The current signal source determines if the activated Adjustment Mode is NTSC or HD.

1. Select the signal source (NTSC or HD).
2. Press the "MENU" button on a remote hand unit.
3. Press the number buttons "0", "1", "5", "7" in sequence. The screen will change to the Adjustment Mode.

**Note:** Repeat steps 1 and 2 if the circuit adjustment mode does not appear on screen.



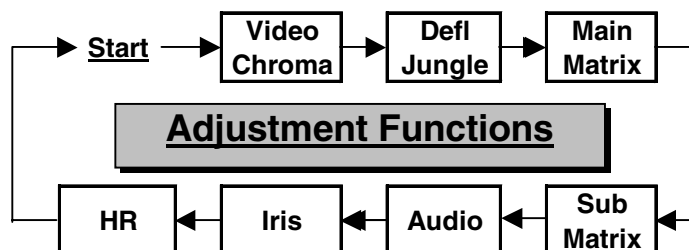
### B. Selection of adjustment Functions and Adjustment Items

To select an adjustment item in the circuit adjustment mode, first select the adjustment function that includes the specific adjustment item to be selected. Then select the adjustment

item.

Refer to the following pages for the listing of adjustment functions and adjustment items.

1. Press the "AUDIO" button on a remote hand unit to select an adjustment function. Each time the button is pressed, the Function changes in the following sequence:



2. Press the "VIDEO" button to select a specific Adjustment Item. The Item number increases each time the "VIDEO" button is pressed.

### C. Changing Data

After selecting an adjustment Item, use the "ADJUST UP/DOWN" button to change data.

- Press "ADJUST DOWN" to decrease the data value.
- Press "ADJUST UP" to increase the data value.

### D. Saving Adjustment Data

Press "ENTER" to save adjustment data in memory. The character display turns red for approximately one second in this step.

**Note:** If the circuit adjustment mode is terminated without pressing "ENTER", changes in adjustment data are not saved.

### E. Terminating the Circuit Adjustment Mode

Press the "MENU" button on the remote hand unit twice to terminate the adjustment mode.

**Note:** The circuit adjustment mode can also be terminated by turning power OFF.

### F. Toggle Between Reception Modes

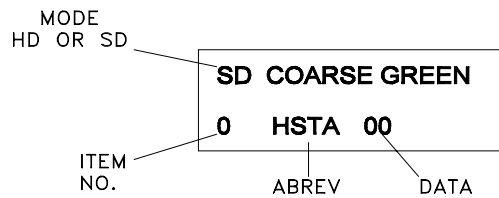
Pressing “3” when in the Adjustment Mode toggles between NTSC, HD, 480P and VGA. However data changes are not automatically saved. **Press “ENTER” to save data before pressing “3”.**

## 6. Convergence Adjustment Mode

The Convergence mode is used to perform raster geometry correction, and convergence adjustments. These adjustments must be made in both the SD (NTSC) and HD modes.

### A. Convergence Mode Activation

1. Press MENU-0-1-5-9
2. When the Convergence Mode is activated, the display below appears on a Green Crosshatch.



### B. Selecting the HD or SD Mode

1. **Select the Signal Source** before entering the Convergence Mode, either an NTSC or HD source.
2. **Enter the Convergence Mode**
  - If the signal source is NTSC, the SD mode is activated.
  - If the signal source is HD, the HD mode is activated.
3. **Activating the HD mode when no HD signal is available**
  - Activate the Factory Option Menu (MENU-0-1-7-0)
  - Use the “Adjust” keys to select “DTV Port” and use the “Enter” key to change the setting from “AUTO” to “1080i”.
  - Exit the Option Menu (Press MENU twice)
  - Select the DTV Inputs as the signal source (INPUT button)
  - Activate the Convergence Mode ... the Convergence mode will be in the HD mode and the internal crosshatch is displayed.
4. **After adjusting Convergence, be sure to set the DTV Port back to AUTO.**
  - Select an analog Input as the signal source (INPUT button)
  - Activate the Factory Option Menu (MENU-0-1-7-0)
  - Use the “Adjust” keys to select “DTV Port” and use the “Enter” key to change the setting from “HD” to “AUTO”.
  - Exit the Option Menu (Press MENU twice)

### C. Convergence Mode Functions

In the Convergence Mode there are three main Functions (Categories).

- Pressing “6” activates CONV MISC
- Pressing “5” activates COARSE CONV
- Pressing “4” activates FINE CONV

#### D. CONV MISC (Press 6)

This mode is used to preset data values controlling the Convergence Generator, and to perform the HV Regulation adjustment.

1. Use the VIDEO button to select an item.
2. Use the ADJUST buttons to change data.

**NOTE:** When Item "0 HVOL" is selected the screen goes black except for the data display. This occurs since a black screen is required when making the HV Regulation adjustment.

#### E. COARSE CONV (Press 5)

There are four Sub Functions in the Coarse mode, COARSE GREEN, COARSE RED, COARSE BLUE and DF.

- COARSE GREEN .... used to make Coarse Raster Geometry Adjustments.
- COARSE RED ... used to make Coarse Red Convergence Adjustments.
- COARSE BLUE ... used to make Coarse Blue Convergence Adjustments.
- DF ... used to preset data values controlling the Dynamic Beam Focus circuit drive signal.

1. Use AUDIO button to select a Sub Function
2. Use the VIDEO button to select an Adjustment Item.
3. Use the ADJUST buttons to change data.

#### F. FINE CONV (Press 4)

##### Sub Functions

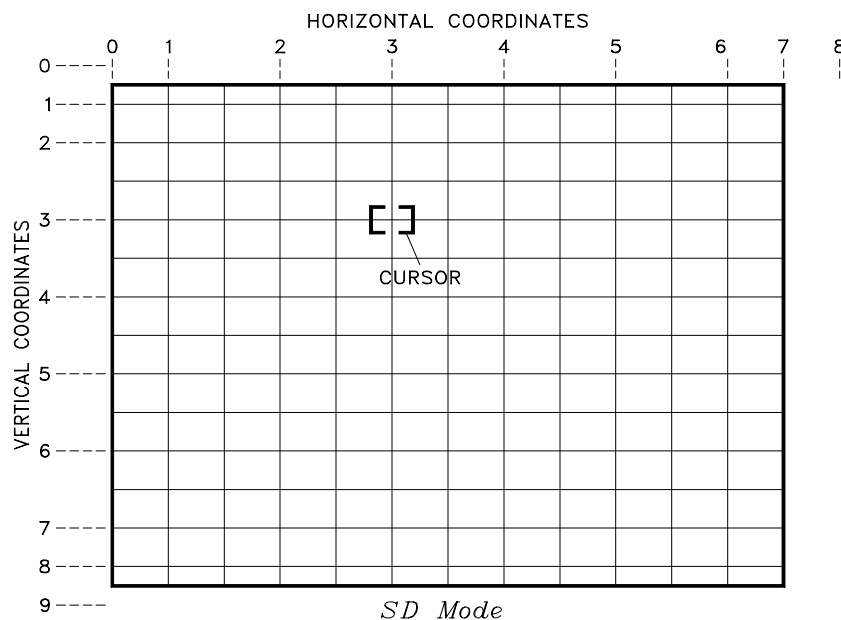
This mode is used to perform Fine Raster Correction, and Fine Red and Blue Convergence Adjustments. There are three Sub Adjustment Functions, selected with the AUDIO button:

- FINE GREEN .... a Green Crosshatch is displayed, to make Fine Raster Corrections.
- FINE RED .... a White Crosshatch is displayed, to make Fine Red Convergence Adjustments.
- FINE BLUE .... a White Crosshatch is displayed, to make Fine Blue Convergence Adjustments.

##### Cursor

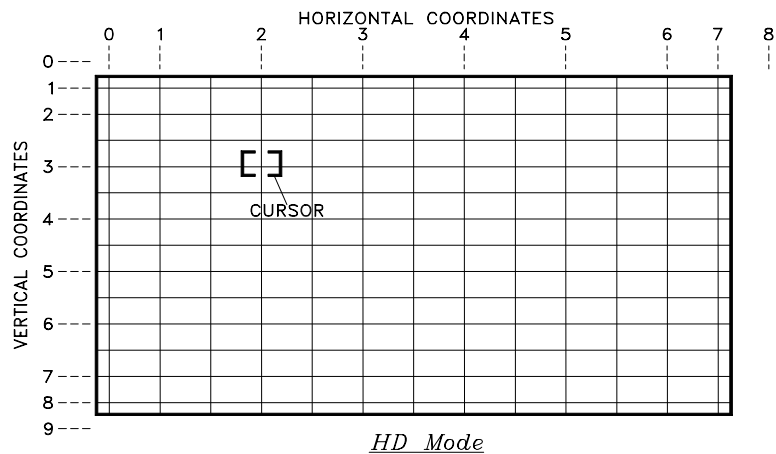
In the Fine mode a Cursor is added to the Crosshatch. The ENTER button toggles the Cursor between two modes:

- MOVE (blinking Cursor) .... use the ADJUST buttons to select any of 64 points on the Crosshatch.
- ADJUST (Non blinking Cursor) .... the ADJUST buttons adjust the active color at the current Cursor position, horizontally or vertically.



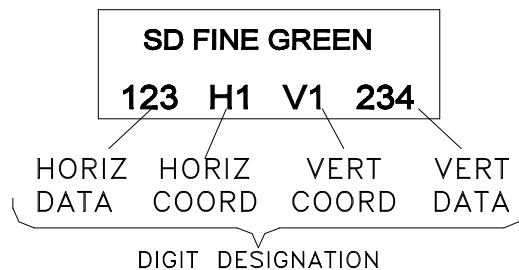
### Cursor Coordinates

Specific intersections in the Cross-hatch are assigned vertical and horizontal coordinates. These are shown in the adjacent diagram. The Cursor can only be moved to those positions that have coordinates assigned. If the Cursor is at coordinates outside the screen area, the Cursor will not be visible. Use the ADJUST buttons to move the Cursor to an intersection on the screen.



### Display

The on-screen display changes in the Fine mode, as shown at the right. The display shows the vertical and horizontal data for the current Cursor Position, and the horizontal and vertical coordinates for that position.



### G. Saving Data and Exiting the Convergence Mode

Press MENU twice to exit the Convergence mode, data is automatically saved.

## E2PROM Replacement

IC7C01 and IC7C02 stores the adjustment data. After replacing the IC, set the data to the values given in the following tables. If good performance is not obtained, perform the Adjustments Procedures given in the Notes column.

### List of Adjustment Items.

| VIDEO / CHROMA Function |         |                        |            |              |    |      | IC2V00        |
|-------------------------|---------|------------------------|------------|--------------|----|------|---------------|
| Function Display        |         | Adjustment Description | Data Range | Initial Data |    |      | Notes         |
| Item #                  | Abbrev. |                        |            | NTSC         | HD | 480P |               |
| 1                       | SCT     | Picture Gain Control   | 0~63       | 42           | 42 | 42   | Sub Contrast  |
| 2                       | SBRT    | Sub Brightness         | 0~63       | 18           | 18 | 18   | Black Level   |
| 3                       | SCOL    | Sub Color              | 0~15       | 3            | 2  | 2    | Preset        |
| 4                       | STIN    | Sub Tint               | 0~15       | 6            | 7  | 7    | "             |
| 5                       | SCON    | Sub Contrast           | 0~15       | 2            | 2  | 2    | "             |
| 6                       | RDRH    | R-Drive (high)         | 0~63       | 42           | 42 | 42   | White Balance |
| 7                       | GDR     | G-Drive                | 0~63       | 50           | 50 | 50   | Preset        |
| 8                       | BDRH    | B-Drive (high)         | 0~63       | 42           | 42 | 42   | White Balance |
| 9                       | CTRH    | R-Cutoff (high)        | 0~63       | 15           | 15 | 15   | "             |
| 10                      | CTGH    | G-Cutoff (high)        | 0~63       | 50           | 50 | 50   | Preset        |
| 11                      | CTBH    | B-Cutoff (high)        | 0~63       | 15           | 15 | 15   | White Balance |
| 12                      | RDRL    | R-Drive (low)          | 0~63       | 50           | 50 | 50   | "             |
| 13                      | BDRL    | B-Drive (low)          | 0~63       | 25           | 25 | 25   | "             |
| 14                      | CTRL    | R-Cutoff (low)         | 0~63       | 23           | 23 | 23   | "             |
| 15                      | CTGL    | G-Cutoff (low)         | 0~63       | 50           | 50 | 50   | "             |
| 16                      | CTBL    | B-Cutoff (low)         | 0~63       | 10           | 10 | 10   | "             |
| 17                      | GMMA    | Gamma control          | 0~15       | 8            | 4  | 5    | Preset        |
| 18                      | BRT     | Brightness control     | 0~63       | 31           | 31 | 31   | User          |
| 19                      | COL     | Color Gain control     | 0~63       | 31           | 31 | 31   | User          |
| 21                      | CONT    | Picture Gain control   | 0~63       | 42           | 42 | 42   | Preset        |
| 52                      | VM      | VM level               | 0~3        | 2            | 2  | 2    | "             |
| 56                      | CRO1    | CR Offset 1            | 0~15       | 9            | 9  | 9    | Cb Cr Offset  |
| 57                      | CBO1    | CB Offset 1            | 0~15       | 10           | 10 | 10   | Cb Cr Offset  |
| 68                      | AG1     | White Aging On/Off     | 0~1        | 0            | 0  | 0    | Preset        |

## DEFL JUNGLE Function

IC4A01

| Function Display |         | Adjustment Description | Data Range | 46" Data |      | 55" Data |      | 65" Data |      | Notes  |
|------------------|---------|------------------------|------------|----------|------|----------|------|----------|------|--------|
| Item #           | Abbrev. |                        |            | HD       | NTSC | HD       | NTSC | HD       | NTSC |        |
| 1                | HWID    | Horizontal Width       | 0~63       | 35       | 36   | 27       | 39   | 38       | 39   | Width  |
| 2                | HKEY    | Horizontal Keystone    | 0~63       | 31       | 31   | 31       | 31   | 31       | 31   | Preset |
| 3                | EWPT    | EW-PCC on top          | 0~63       | 25       | 26   | 26       | 31   | 26       | 27   | "      |
| 5                | EWPB    | EW-PCC on bottom       | 0~63       | 25       | 26   | 26       | 20   | 26       | 27   | "      |
| 7                | VHGT    | Vertical Height        | 0~63       | 36       | 46   | 40       | 46   | 35       | 47   | Height |
| 8                | VLIN    | Vertical Linearity     | 0~15       | 12       | 12   | 8        | 9    | 12       | 12   | Preset |
| 9                | VSCN    | Vertical S-Correction  | 0~15       | 0        | 0    | 0        | 0    | 0        | 0    | "      |
| 20               | VPOS    | Vertical Position      | 0~63       | 31       | 0    | 36       | 36   | 31       | 0    | "      |

### MAIN MATRIX Function

IC6M00

| Function Display |         | Adjustment<br>Description | Data<br>Range | Initial<br>Data | Notes        |
|------------------|---------|---------------------------|---------------|-----------------|--------------|
| Item #           | Abbrev. |                           |               |                 |              |
| 1                | TNTM    | Main Tint                 | 0~63          | 29              | Preset       |
| 2                | COLM    | Main Color                | 0~63          | 19              | "            |
| 3                | YDRM    | Main Gain Control         | 0~31          | 12              | Main Y Level |

### SUB MATRIX Function

IC6P00

| Function Display |         | Adjustment<br>Description | Data<br>Range | Initial<br>Data | Notes            |
|------------------|---------|---------------------------|---------------|-----------------|------------------|
| Item #           | Abbrev. |                           |               |                 |                  |
| 1                | TNTS    | Sub Tint                  | 0~63          | 30              | Sub Picture Tint |
| 2                | COLS    | Sub Color                 | 0~63          | 30              | Sub Color        |
| 3                | YDRS    | Sub Gain Control          | 0~31          | 12              | Sub Y Level      |
| 4                | VPDS    | Sub-V Pedestal DC Control | 0~15          | 7               | Preset           |
| 5                | UPDS    | Sub-U Pedestal DC Control | 0~15          | 7               | "                |

### AUDIO Function

IC3A01

| Function Display |         | Adjustment<br>Description | Data<br>Range | Initial<br>Data | Notes       |
|------------------|---------|---------------------------|---------------|-----------------|-------------|
| Item #           | Abbrev. |                           |               |                 |             |
| 1                | INP     | Input Level Alignment     | 0~15          | 8               | Input Level |
| 3                | WDE     | Wideband Separator Align. | 0~31          | 3               | Separation  |
| 4                | SPC     | Spectral Separator Align. | 0~31          | 3               | "           |

### IRIS Function

| Function Display |         | Adjustment<br>Description         | Data<br>Range | Initial<br>Data | Notes  |
|------------------|---------|-----------------------------------|---------------|-----------------|--------|
| Item #           | Abbrev. |                                   |               |                 |        |
| 1                | OT1     | Lower thresh hold voltage setting | 0-255         | 100             | Preset |

### HR Function

| Item<br>Number | Abbrev.<br>Name | Description                     | Data |
|----------------|-----------------|---------------------------------|------|
| 1              | HR              | Display horiz. Centering (NTSC) | 128  |
| 2              | HRHD            | Display horiz. Centering (HD)   | 128  |

### DYNAMIC FOCUS

MENU-0-1-5-9

| Item<br>Number | Abbrev.<br>Name | Description              | Data<br>SD&HD |
|----------------|-----------------|--------------------------|---------------|
| 0              | DFH             | Dynamic Focus Horizontal | 235           |
| 1              | DFV             | Dynamic Focus Vertical   | 100           |

### CONV MISC Items

(MENU-0-1-5-9-6)

| Item Number | Abbrev. Name | Description                            | Data |     | Notes   |
|-------------|--------------|----------------------------------------|------|-----|---------|
|             |              |                                        | SD   | HD  |         |
| 0           | HVOL         | High Voltage Control                   | 128  |     | HV Adj. |
| 1           | VSTR         | Vertical Correction Signal Start Point | 0    | 0   | Preset  |
| 2           | VCNT         | Vert. Correction Increment per Line    | 29   | 29  | "       |
| 3           | STLN         | Horiz. Correction Start Line Number    | 59   | 85  | "       |
| 4           | FPHS         | Fine H-Phase of Correction Signal      | 200  | 200 | "       |
| 5           | CPHS         | Coarse H-Phase of Correction Signal    | 15   | 15  | "       |
| 6           | DPHS         | Dynamic Focus H-Phase                  | 245  | 245 | "       |
| 7           | TPHS         | Test Pattern H-Phase                   | 70   | 71  | "       |
| 8           | HDLY         | HBLK Delay                             | 235  | 240 | "       |
| 9           | PLWD         | HBLK Pulse Width                       | 31   | 31  | "       |

\* Do not change "0 HVOL" if it has been previously set.

### CONV GREEN Items

(MENU-0-1-5-9-5)

| Item Number | Abbrev. Name | Description                       | 46" Data |      | 55" Data |      | 65" Data |      | Notes       |
|-------------|--------------|-----------------------------------|----------|------|----------|------|----------|------|-------------|
|             |              |                                   | SD       | HD   | SD       | HD   | SD       | HD   |             |
| 0           | HSTA*        | Horizontal Position               | 0        | 0    | 0        | 0    | 0        | 0    | Centering   |
| 1           | SPCC         | Side Pincushion Correction        | 0        | 0    | 0        | 0    | 0        | 0    | Geo. (Conv) |
| 2           | HWID         | Width                             | 0        | 0    | 0        | 0    | 0        | 0    | Geo. (Conv) |
| 3           | SKEW         | Skew (Y axis rotation)            | 0        | 0    | 0        | 0    | 0        | 0    | Geo. (Conv) |
| 4           | VSTA*        | Vertical Position                 | -43      | 0    | -18      | 20   | -45      | 0    | Centering   |
| 5           | VKEY         | Vertical Keystone Correction      | -15      | -15  | -30      | -30  | -25      | -25  | Geo. (Conv) |
| 6           | TBPC         | Top/Bottom Pincushion Correction  | -250     | -200 | -290     | -260 | -310     | -250 | Geo. (Conv) |
| 7           | TILT         | Horizontal Tilt (X axis rotation) | 0        | 0    | 0        | 0    | 0        | 0    | Geo. (Conv) |

\*HSTA and VSTA must not exceed  $\pm 200$

### CONV RED Items

(MENU-0-1-5-9-5)

| Item Number | Abbrev. Name | Description                       | 46" Data |      | 55" Data |      | 65" Data |      | Notes        |
|-------------|--------------|-----------------------------------|----------|------|----------|------|----------|------|--------------|
|             |              |                                   | SD       | HD   | SD       | HD   | SD       | HD   |              |
| 0           | HSTA*        | Horizontal Position               | 40       | 40   | 40       | 40   | 0        | 0    | Static Conv. |
| 1           | HLIN         | Horiz. Linearity                  | -250     | -230 | -220     | -220 | -230     | -200 | Coarse Conv. |
| 2           | SKEW         | Skew (Y axis rotation)            | 0        | 0    | 0        | 0    | 0        | 0    | Coarse Conv. |
| 3           | HWID         | Width                             | -80      | -80  | -10      | -30  | -20      | -20  | Coarse Conv. |
| 4           | HSBW         | Horiz. Side Bow Correction        | 50       | 50   | 40       | 40   | 40       | 40   | Coarse Conv. |
| 5           | VST*         | Vertical Position                 | 0        | 0    | 0        | 0    | 0        | 0    | Static Conv. |
| 6           | VKEY         | Vertical Keystone Correction      | -150     | -135 | -140     | -150 | -120     | -110 | Coarse Conv. |
| 7           | TILT         | Horizontal Tilt (X axis rotation) | 0        | 0    | 0        | 0    | 0        | 0    | Coarse Conv. |

\*HSTA and VSTA must not exceed  $\pm 200$

### CONV BLUE Items

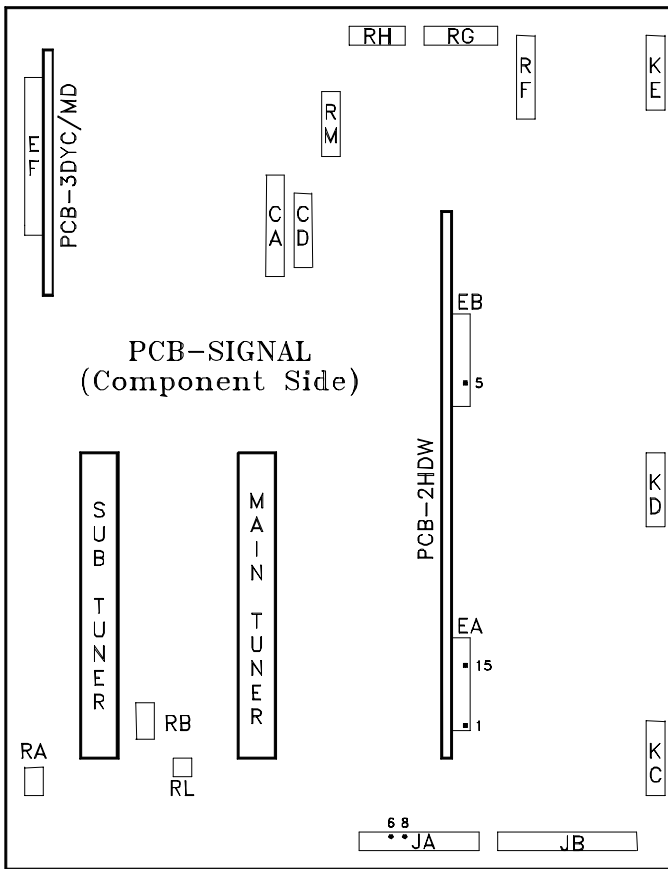
(MENU-0-1-5-9-5)

| Item Number | Abbrev. Name | Description                       | 46" Data |     | 55" Data |     | 65" Data |     | Notes        |
|-------------|--------------|-----------------------------------|----------|-----|----------|-----|----------|-----|--------------|
|             |              |                                   | SD       | HD  | SD       | HD  | SD       | HD  |              |
| 0           | HSTA*        | Horizontal Position               | -40      | -40 | -40      | -40 | 0        | 0   | Static Conv. |
| 1           | HLIN         | Horiz. Linearity                  | 250      | 220 | 270      | 250 | 230      | 200 | Coarse Conv. |
| 2           | SKEW         | Skew (Y axis rotation)            | 0        | 0   | 0        | 0   | 0        | 0   | Coarse Conv. |
| 3           | HWID         | Width                             | -20      | -20 | 10       | 10  | 0        | 0   | Coarse Conv. |
| 4           | HSBW         | Horiz. Side Bow Correction        | -50      | -50 | -40      | -40 | -40      | -40 | Coarse Conv. |
| 5           | VST*         | Vertical Position                 | 0        | 0   | 0        | 0   | 0        | 0   | Static Conv. |
| 6           | VKEY         | Vertical Keystone Correction      | 150      | 135 | 140      | 150 | 120      | 110 | Coarse Conv. |
| 7           | TILT         | Horizontal Tilt (X axis rotation) | 0        | 0   | 0        | 0/0 | 0        | 0   | Coarse Conv. |

\*HSTA and VSTA must not exceed  $\pm 200$

## Adjustments Test Point Locations

(FRONT)

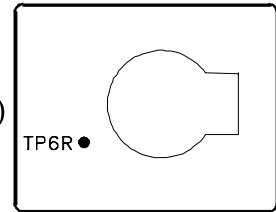


(REAR)

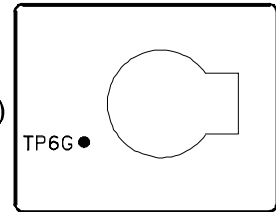
### Test Points

DT pins 3 & 6 ... HV Regulation Adjustment  
 DT pins 7 & 8 .... Sub Contrast  
 JA pins 6 & 8 ... Audio Adjustments  
 EA pin 1 & 15 ... Main & Sub Y Level  
 EB pin 5 ..... Side by Side Sub Color  
 TP6R ..... Red CRT Cutoff  
 TP6G ..... Green CRT Cutoff  
 TP6B ..... Blue CRT Cutoff

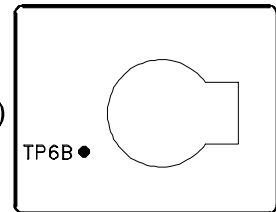
PCB-CRT (R)  
(Component Side)



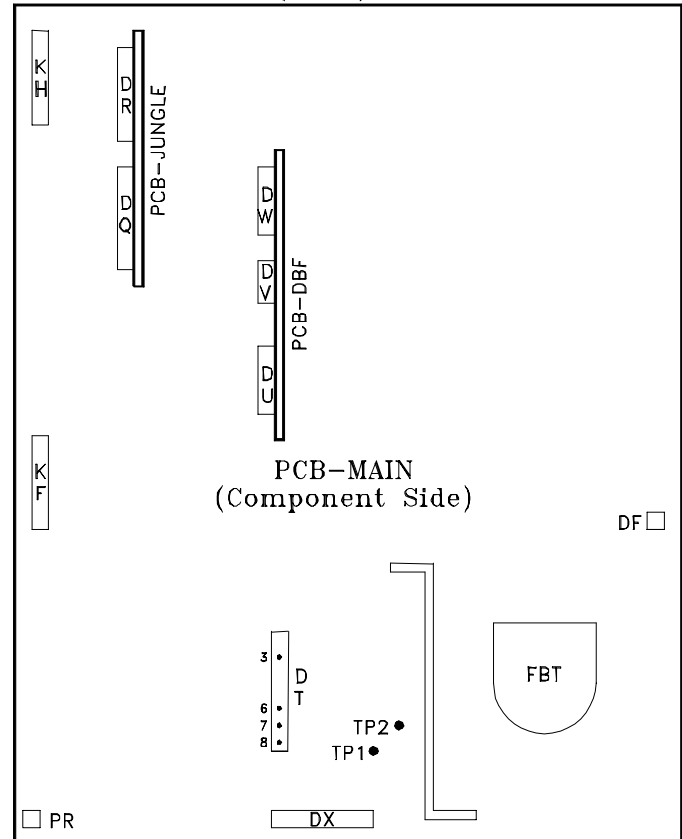
PCB-CRT (G)  
(Component Side)



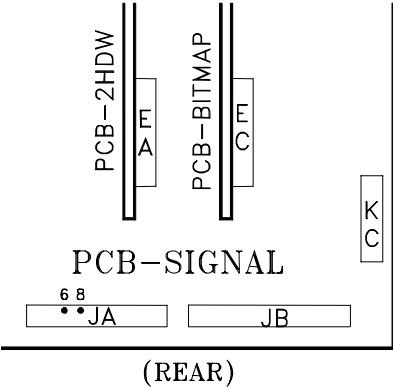
PCB-CRT (B)  
(Component Side)

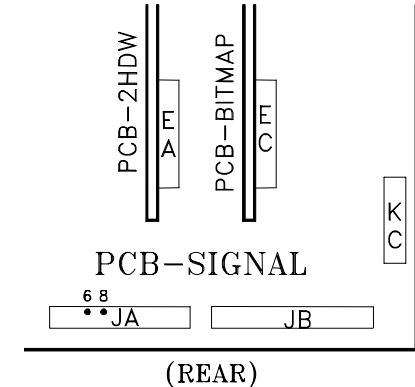


(FRONT)



(REAR)

| <b>[Audio Circuit]</b><br><b>1. MCS Input Level</b>                                              |                                | <b>Purpose:</b> Check the input signal level to the MCS circuit<br><b>Symptom:</b> Distorted sound during a stereo broadcast.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                |  |  |        |         |      |   |     |   |   |     |    |   |     |    |
|--------------------------------------------------------------------------------------------------|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|--|--|--------|---------|------|---|-----|---|---|-----|----|---|-----|----|
| Measuring Instrument                                                                             | Oscilloscope                   | <ol style="list-style-type: none"> <li>1. Supply an RF MCS signal to the Ant A input, 300 Hz at 100% modulation (25 kHz deviation) for right and left channels.</li> <li>2. Connect the oscilloscope to connector JA pin 8 (Main Tuner Right Audio).</li> <li>3. Enter the Adjustment Mode and select the Audio Function.</li> <li>4. Verify that the Audio Function items are set to the data values given the table below.</li> <li>5. Set the data for Item "1 INP" for 1.56 Vp-p <math>\pm 0.06V</math>.</li> <li>6. Connect the oscilloscope to connector JA pin 6 (Main Tuner Left Audio).</li> <li>7. Confirm that the left audio level at pin 6 of the JA connector is 1.56 Vp-p <math>\pm 0.06V</math>.</li> </ol>                                                                                                                                                                                                                                                                                                      |                |  |  |        |         |      |   |     |   |   |     |    |   |     |    |
| Test Point                                                                                       | Connector JA pins 6 & 8        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                |  |  |        |         |      |   |     |   |   |     |    |   |     |    |
| Ext. Trigger                                                                                     | -----                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                |  |  |        |         |      |   |     |   |   |     |    |   |     |    |
| Measuring Range                                                                                  | 50mV/Div                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                |  |  |        |         |      |   |     |   |   |     |    |   |     |    |
| Input Signal                                                                                     | RF Stereo<br>300 Hz modulation |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                |  |  |        |         |      |   |     |   |   |     |    |   |     |    |
| Input Terminal                                                                                   | RF Input                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                |  |  |        |         |      |   |     |   |   |     |    |   |     |    |
|  <p>(REAR)</p> |                                | <p><b>Note:</b> Adjustment 2 (Stereo Separation) must be performed after this adjustment)</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="border: 1px solid black; padding: 5px; width: 30%;"> <p align="center"><b>CIRCUIT ADJUST MODE</b></p> <p>Activate ..... MENU-0-1-5-7</p> <p>Function .....AUDIO</p> <p>Item No. ....VIDEO</p> <p>Adjust Data .....ADJUST</p> <p>Save Data .... ENTER</p> <p>Exit .....MENU (twice)</p> </div> <table border="1" style="width: 30%;"> <thead> <tr> <th align="center" colspan="3">AUDIO Function</th></tr> <tr> <th align="center">Item #</th><th align="center">Abbrev.</th><th align="center">Data</th></tr> </thead> <tbody> <tr> <td align="center">1</td><td align="center">INP</td><td align="center">7</td></tr> <tr> <td align="center">3</td><td align="center">WDE</td><td align="center">16</td></tr> <tr> <td align="center">4</td><td align="center">SPC</td><td align="center">16</td></tr> </tbody> </table> </div> | AUDIO Function |  |  | Item # | Abbrev. | Data | 1 | INP | 7 | 3 | WDE | 16 | 4 | SPC | 16 |
| AUDIO Function                                                                                   |                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                |  |  |        |         |      |   |     |   |   |     |    |   |     |    |
| Item #                                                                                           | Abbrev.                        | Data                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                |  |  |        |         |      |   |     |   |   |     |    |   |     |    |
| 1                                                                                                | INP                            | 7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                |  |  |        |         |      |   |     |   |   |     |    |   |     |    |
| 3                                                                                                | WDE                            | 16                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                |  |  |        |         |      |   |     |   |   |     |    |   |     |    |
| 4                                                                                                | SPC                            | 16                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                |  |  |        |         |      |   |     |   |   |     |    |   |     |    |

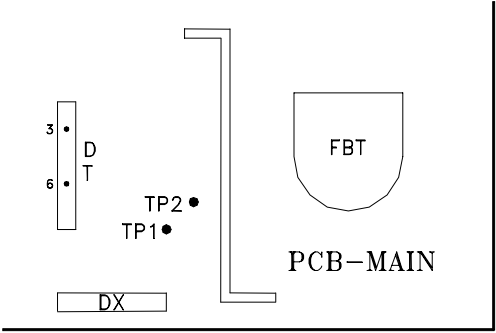
|                                                                                                   |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------------------------------------------------------------------------------------------------|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>[Audio Circuit]</b><br><b>2. Separation</b>                                                    |                   | <b>Purpose</b> Check stereo separation<br><b>Symptom:</b> Poor stereo separation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Measuring Instrument                                                                              | Oscilloscope      | <p><b>Note:</b> This adjustment must follow Adjustment 1 (Input Level)</p> <ol style="list-style-type: none"> <li>1. Supply a RF Stereo Signal (dual tone stereo) to the Ant. A input.               <ul style="list-style-type: none"> <li>• Left Channel = 300 Hz modulation</li> <li>• Right Channel = no modulation</li> </ul> </li> <li>2. Connect the oscilloscope to connector JA pin 8 (Main Tuner Right Audio).</li> <li>3. Enter the Adjustment Mode and select the Audio Function.</li> <li>4. Set the data for Item "3 WDE" for minimum Right Audio signal.</li> <li>5. Change the modulation frequency to 3kHz.</li> <li>6. Adjust the data for Item "4 SPC" for minimum Right Audio signal.</li> </ol> |
| Test Point                                                                                        | Conector JA pin 8 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Ext. Trigger                                                                                      | -----             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Measuring Range                                                                                   | 10mV/Div          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Input Signal                                                                                      | RF Stereo         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Input Terminal                                                                                    | RF Input          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|  <p>(REAR)</p> |                   | <div style="border: 1px solid black; padding: 5px; width: 30%;"> <p align="center"><b>CIRCUIT ADJUST MODE</b></p> <p>Activate ..... MENU-0-1-5-7</p> <p>Function .....AUDIO</p> <p>Item No. ....VIDEO</p> <p>Adjust Data .....ADJUST</p> <p>Save Data .... ENTER</p> <p>Exit .....MENU (twice)</p> </div>                                                                                                                                                                                                                                                                                                                                                                                                            |

|                                                    |                                                                                   |
|----------------------------------------------------|-----------------------------------------------------------------------------------|
| <b>[HV Circuit]</b><br><br><b>3. HV Regulation</b> | <b>Purpose:</b> To set the CRT Anode voltage.<br><br><b>Symptom:</b> Dark Picture |
|----------------------------------------------------|-----------------------------------------------------------------------------------|

|                             |                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------------|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Measuring Instrument</b> | DC Voltmeter            | <b>Note:</b> This adjustment must be rechecked following Adjustment 9 CRT Cutoff.<br><br><ol style="list-style-type: none"> <li>1. Supply a video monoscope signal.</li> <li>2. Set Contrast to maximum, and Brightness to mid position.</li> <li>3. Connect a DC volt meter between pins 3 and 6 of the DT connector.</li> <li style="padding-left: 20px;">(Positive lead to pin 3)</li> <li>4. Activate the Conv-Misc Mode.</li> <li>5. Select Item "0 HVOL" (screen goes black).</li> <li>6. Adjust Item "0 HVOL" for 15.4V <math>\pm</math>0.1V on the meter.</li> <li>7. Save data and exit the Conv-Misc mode.</li> <li>8. Confirm that the voltage does not change more than 0.15V.</li> </ol><br><b>Note:</b> This adjustment must be performed if E2RESET or Convergence E2RESET are activated. |
| <b>Test Point</b>           | DT connector pins 3 & 6 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Ext. Trigger</b>         | -----                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Measuring Range</b>      | -----                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Input Signal</b>         | Video Signal Monoscope  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Input Terminal</b>       | Video Input             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |



(REAR)

**CONVERGENCE MODE**

Activate .....MENU-0-1-5-9

Misc. .... "6"

Coarse..... "5"

Fine ..... "4"

Color (R,G or B).....AUDIO

Item No.....VIDEO

Adjust/Move.....ADJUST

Cursor Toggle.....ENTER

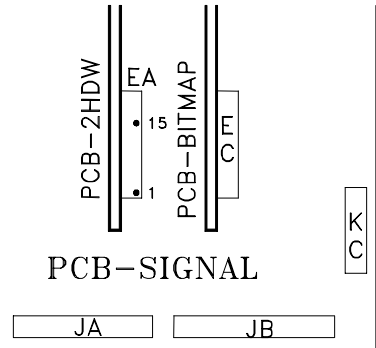
Save & Exit.....MENU (twice)

|                                                          |                                                                                                   |
|----------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| <b>[Video Circuit]</b><br><br><b>4. Main/Sub Y Level</b> | <b>Purpose</b> To set picture luminance<br><br><b>Symptom:</b> Excess or insufficient brightness. |
|----------------------------------------------------------|---------------------------------------------------------------------------------------------------|

|                             |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------------|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Measuring Instrument</b> | Oscilloscope             | <ol style="list-style-type: none"> <li>1. Supply a color bar signal to a Video Input (not an RF input).</li> <li>2. Select the color bar signal for both the main and sub pictures.</li> <li>3. Connect the oscilloscope to connector EA pin 15.</li> <li>4. Activate the Adjustment Mode</li> <li>5. Select Item "3 YDRM" in the Main Matrix function.</li> <li>6. Adjust the data for 0.7 Vp-p max. - 0.67 Vp-p min. at EA pin 15.</li> <li style="padding-left: 20px;">(If it cannot be adjusted within this range, set to the lower value)</li> <li>7. Move the oscilloscope to EA pin 1.</li> <li>8. Select Item "3 YDRS" in the Sub Matrix function.</li> <li>9. Adjust the data for 0.7 Vp-p max. - 0.67 Vp-p min. at EA pin 1.</li> <li style="padding-left: 20px;">(If it cannot be adjusted within this range, set to the lower value)</li> </ol> |
| <b>Test Point</b>           | EA connector pins 15 & 1 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Ext. Trigger</b>         | -----                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Measuring Range</b>      | -----                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Input Signal</b>         | Color Bars               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Input Terminal</b>       | Video Input              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |



(REAR)

**CIRCUIT ADJUST MODE**

Activate ..... MENU-0-1-5-7

Function .....AUDIO

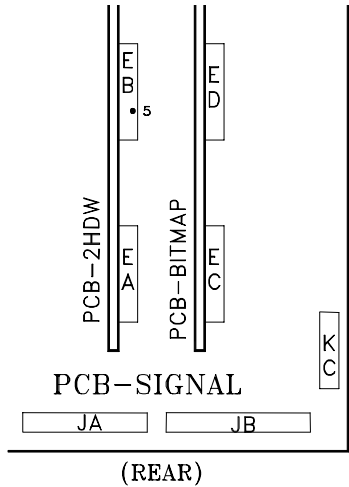
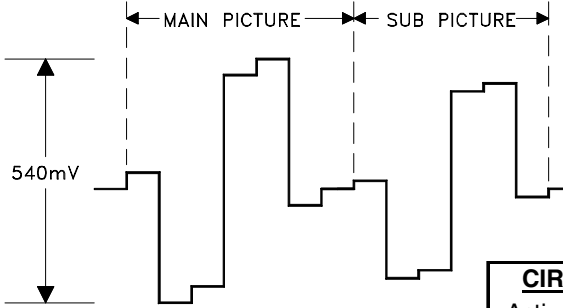
Item No. ....VIDEO

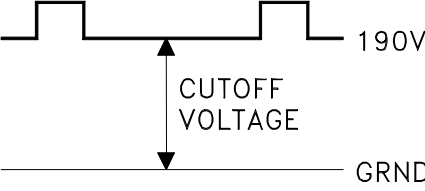
Adjust Data .....ADJUST

Save Data .... ENTER

Exit .....MENU (twice)

|                                                            |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|------------------------------------------------------------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| [Video Circuit]<br><b>5. Side by Side Sub Picture Tint</b> |             | <b>Purpose:</b> To match the sub picture color to that of the main picture.<br><b>Symptom:</b> Main and sub pictures colors differ.                                                                                                                                                                                                                                                                                                                                    |
| Measuring Instrument                                       | ----        | <ol style="list-style-type: none"> <li>1. Supply an NTSC signal.</li> <li>2. Select the NTSC signal as the source for both the main and sub pictures.</li> <li>3. Activate Side by Side POP</li> <li>3. Activate the Adjustment mode.</li> <li>4. Select Item "1 TNTS" in the Sub Matrix Function.</li> <li>5. Adjust data to match the sub picture color to that of the main picture.<br/>(If "1 TNTS" range is short, adjust Items "4 VPDS" and "5 UPDS")</li> </ol> |
| Test Point                                                 | ----        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Ext. Trigger                                               | ----        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Measuring Range                                            | -----       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Input Signal                                               | NTSC        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Input Terminal                                             | RF or Video |                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                                            |             | <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p align="center"><b>CIRCUIT ADJUST MODE</b></p> <p>Activate ..... MENU-0-1-5-7</p> <p>Function .....AUDIO</p> <p>Item No. ....VIDEO</p> <p>Adjust Data .....ADJUST</p> <p>Save Data ....ENTER</p> <p>Exit .....MENU (twice)</p> </div>                                                                                                                                    |

|                                                                                     |                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------------------------------------------------------------------------------|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| [Video Circuit]<br><b>6. Side by Side Sub Color</b>                                 |                         | <b>Purpose</b> To set the sub picture color level.<br><b>Symptom:</b> Main and sub pictures color levels differs.                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Measuring Instrument                                                                | Oscilloscope            | <b>Note:</b> Let the set run for at least one minute before making this adjustment. <ol style="list-style-type: none"> <li>1. Supply a color bar signal.</li> <li>2. Select the color bar signal as the source for both the main and sub picture.</li> <li>3. Connect an oscilloscope to pin 5 of the EB connector.</li> <li>4. Activate the Side by Side mode.</li> <li>5. Activate the Service Mode</li> <li>6. Select Item "2 COLS" in the Sub Matrix function.</li> <li>7. Adjust data so the amplitude of the Sub signal equals that of the main signal.</li> </ol> |
| Test Point                                                                          | EB connector pin 5      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Ext. Trigger                                                                        | -----                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Measuring Range                                                                     | 200mV/div<br>20usec/div |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Input Signal                                                                        | Color Bars              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Input Terminal                                                                      | Video Input             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|  |                         |  <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p align="center"><b>CIRCUIT ADJUST MODE</b></p> <p>Activate ..... MENU-0-1-5-7</p> <p>Function .....AUDIO</p> <p>Item No. ....VIDEO</p> <p>Adjust Data .....ADJUST</p> <p>Save Data ....ENTER</p> <p>Exit .....MENU (twice)</p> </div>                                                                                                                                                 |

| <b>[CRT Circuit]</b><br><b>7. CRT Cutoff</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                     | <b>Purpose:</b> To set the cutoff point for all three CRTs.<br><b>Symptom:</b> Monochrome has a color tint, or incorrect brightness.                                                                                                                                                                                                                                                                                                                                                                                    |         |      |   |     |    |   |      |    |   |      |   |   |      |    |   |     |    |   |      |    |   |      |    |    |      |    |    |      |    |    |     |    |    |     |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|---|-----|----|---|------|----|---|------|---|---|------|----|---|-----|----|---|------|----|---|------|----|----|------|----|----|------|----|----|-----|----|----|-----|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Measuring Instrument                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Oscilloscope        | <b>Note: Use the Expand mode (full screen)</b><br><br>(Refer to page 29 for Test Point locations.)<br>1. Select an External Input with no signal.<br>2. Enter the Adjustment Mode, Video/Chroma Function.<br>3. Set the data to the values given in the table below.<br>4. Connect the oscilloscope to TP6R.<br>5. Adjust the Red Screen VR so the black level is 190V, as shown below, or 199V $\pm$ 1VDC using an DC Voltmeter.<br>6. Repeat Steps 4 and 5 to set the Blue and Green Screen VRs, using TP6G and TP6B. |         |      |   |     |    |   |      |    |   |      |   |   |      |    |   |     |    |   |      |    |   |      |    |    |      |    |    |      |    |    |     |    |    |     |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Test Point                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | TP6R, TP6G, TP6B    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |         |      |   |     |    |   |      |    |   |      |   |   |      |    |   |     |    |   |      |    |   |      |    |    |      |    |    |      |    |    |     |    |    |     |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Ext. Trigger                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | -----               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |         |      |   |     |    |   |      |    |   |      |   |   |      |    |   |     |    |   |      |    |   |      |    |    |      |    |    |      |    |    |     |    |    |     |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Measuring Range                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 50V/Div. 2msec/Div. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |         |      |   |     |    |   |      |    |   |      |   |   |      |    |   |     |    |   |      |    |   |      |    |    |      |    |    |      |    |    |     |    |    |     |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Input Signal                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | None                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |         |      |   |     |    |   |      |    |   |      |   |   |      |    |   |     |    |   |      |    |   |      |    |    |      |    |    |      |    |    |     |    |    |     |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Input Terminal                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Video Input         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |         |      |   |     |    |   |      |    |   |      |   |   |      |    |   |     |    |   |      |    |   |      |    |    |      |    |    |      |    |    |     |    |    |     |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>VIDEO / CHROMA Function</b> <table border="1"> <thead> <tr> <th>Item #</th><th>Abbrev.</th><th>Data</th></tr> </thead> <tbody> <tr><td>1</td><td>SCT</td><td>42</td></tr> <tr><td>2</td><td>SBRT</td><td>18</td></tr> <tr><td>5</td><td>SCON</td><td>2</td></tr> <tr><td>6</td><td>RDRH</td><td>42</td></tr> <tr><td>7</td><td>GDR</td><td>50</td></tr> <tr><td>8</td><td>BDRH</td><td>42</td></tr> <tr><td>9</td><td>CTRH</td><td>15</td></tr> <tr><td>10</td><td>CTGH</td><td>50</td></tr> <tr><td>11</td><td>CTBH</td><td>15</td></tr> <tr><td>18</td><td>BRT</td><td>31</td></tr> <tr><td>19</td><td>COL</td><td>0</td></tr> </tbody> </table> |                     | Item #                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Abbrev. | Data | 1 | SCT | 42 | 2 | SBRT | 18 | 5 | SCON | 2 | 6 | RDRH | 42 | 7 | GDR | 50 | 8 | BDRH | 42 | 9 | CTRH | 15 | 10 | CTGH | 50 | 11 | CTBH | 15 | 18 | BRT | 31 | 19 | COL | 0 | <b>Note: White Balance must be performed after this adjustment.</b><br><br> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <b>CIRCUIT ADJUST MODE</b><br/>                     Activate ..... MENU-0-1-5-7<br/>                     Function .....AUDIO<br/>                     Item No. ....VIDEO<br/>                     Adjust Data .....ADJUST<br/>                     Save Data ....ENTER<br/>                     Exit .....MENU (twice)                 </div> |
| Item #                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Abbrev.             | Data                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |         |      |   |     |    |   |      |    |   |      |   |   |      |    |   |     |    |   |      |    |   |      |    |    |      |    |    |      |    |    |     |    |    |     |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | SCT                 | 42                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |         |      |   |     |    |   |      |    |   |      |   |   |      |    |   |     |    |   |      |    |   |      |    |    |      |    |    |      |    |    |     |    |    |     |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | SBRT                | 18                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |         |      |   |     |    |   |      |    |   |      |   |   |      |    |   |     |    |   |      |    |   |      |    |    |      |    |    |      |    |    |     |    |    |     |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | SCON                | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |         |      |   |     |    |   |      |    |   |      |   |   |      |    |   |     |    |   |      |    |   |      |    |    |      |    |    |      |    |    |     |    |    |     |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | RDRH                | 42                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |         |      |   |     |    |   |      |    |   |      |   |   |      |    |   |     |    |   |      |    |   |      |    |    |      |    |    |      |    |    |     |    |    |     |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | GDR                 | 50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |         |      |   |     |    |   |      |    |   |      |   |   |      |    |   |     |    |   |      |    |   |      |    |    |      |    |    |      |    |    |     |    |    |     |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | BDRH                | 42                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |         |      |   |     |    |   |      |    |   |      |   |   |      |    |   |     |    |   |      |    |   |      |    |    |      |    |    |      |    |    |     |    |    |     |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | CTRH                | 15                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |         |      |   |     |    |   |      |    |   |      |   |   |      |    |   |     |    |   |      |    |   |      |    |    |      |    |    |      |    |    |     |    |    |     |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | CTGH                | 50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |         |      |   |     |    |   |      |    |   |      |   |   |      |    |   |     |    |   |      |    |   |      |    |    |      |    |    |      |    |    |     |    |    |     |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 11                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | CTBH                | 15                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |         |      |   |     |    |   |      |    |   |      |   |   |      |    |   |     |    |   |      |    |   |      |    |    |      |    |    |      |    |    |     |    |    |     |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 18                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | BRT                 | 31                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |         |      |   |     |    |   |      |    |   |      |   |   |      |    |   |     |    |   |      |    |   |      |    |    |      |    |    |      |    |    |     |    |    |     |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 19                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | COL                 | 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |         |      |   |     |    |   |      |    |   |      |   |   |      |    |   |     |    |   |      |    |   |      |    |    |      |    |    |      |    |    |     |    |    |     |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

| <b>[CRT Circuit]</b>                                                                                                                                                                                                                                                                                                                                                                                                   |                   | <b>Purpose</b> To set the CRTs white level in the NTSC mode.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |         |     |        |       |        |      |        |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-----|--------|-------|--------|------|--------|--|
| <b>8. White Balance (NTSC)</b>                                                                                                                                                                                                                                                                                                                                                                                         |                   | <b>Symptom:</b> Monochrome has a color tint.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |         |     |        |       |        |      |        |  |
| <b>Measuring Instrument</b>                                                                                                                                                                                                                                                                                                                                                                                            | DC Voltmeter      | <b>Note: Use the Expand mode (full screen)</b><br><br><ol style="list-style-type: none"><li>1. Supply a full White Raster Signal</li><li>2. Activate the Service Mode, Video/Chroma function.</li><li>3. Set the data for Item "19 COL" to 0.</li><li>4. Adjust Items "6 RDRH" and "8 BDRH" for optimum white at the center of the screen.</li><li>5. Reduce the input luminance level to 25%.</li><li>6. Adjust Items "9 CTRH" and "11 CTBH" for optimum white.</li><li>7. Insert a Milliammeter in series with each CRT Cathode. The maximum allowable current for each CRT is given in the table below.</li><li>8. Set the white raster to 100% and adjust Items "12 RDRL" and "13 BDRL" for optimum white at the center of the screen.</li><li>9. Reduce the luminance level to 25%.</li><li>10. Adjust Item "14 CTRL" and "16 CTBL" for optimum white.</li><li>11. Set the data for Item "19 COL" back to 28.</li></ol> |         |     |        |       |        |      |        |  |
| <b>Test Point</b>                                                                                                                                                                                                                                                                                                                                                                                                      | -----             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |         |     |        |       |        |      |        |  |
| <b>Ext. Trigger</b>                                                                                                                                                                                                                                                                                                                                                                                                    | -----             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |         |     |        |       |        |      |        |  |
| <b>Measuring Range</b>                                                                                                                                                                                                                                                                                                                                                                                                 | -----             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |         |     |        |       |        |      |        |  |
| <b>Input Signal</b>                                                                                                                                                                                                                                                                                                                                                                                                    | NTSC White Raster |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |         |     |        |       |        |      |        |  |
| <b>Input Terminal</b>                                                                                                                                                                                                                                                                                                                                                                                                  | RF or Video       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |         |     |        |       |        |      |        |  |
| <div><div><b>CIRCUIT ADJUST MODE</b><br/>Activate ..... MENU-0-1-5-7<br/>Function .....AUDIO<br/>Item No. ....VIDEO<br/>Adjust Data .....ADJUST<br/>Save Data ....ENTER<br/>Exit .....MENU (twice)</div><div><b>Maximum CRT Current</b><table><tr><th>CRT</th><th>CURRENT</th></tr><tr><td>RED</td><td>580 uA</td></tr><tr><td>GREEN</td><td>580 uA</td></tr><tr><td>BLUE</td><td>580 uA</td></tr></table></div></div> |                   | CRT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | CURRENT | RED | 580 uA | GREEN | 580 uA | BLUE | 580 uA |  |
| CRT                                                                                                                                                                                                                                                                                                                                                                                                                    | CURRENT           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |         |     |        |       |        |      |        |  |
| RED                                                                                                                                                                                                                                                                                                                                                                                                                    | 580 uA            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |         |     |        |       |        |      |        |  |
| GREEN                                                                                                                                                                                                                                                                                                                                                                                                                  | 580 uA            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |         |     |        |       |        |      |        |  |
| BLUE                                                                                                                                                                                                                                                                                                                                                                                                                   | 580 uA            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |         |     |        |       |        |      |        |  |

|                                                                                                                                                                                                                                                                                                                                                  |                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>[CRT Circuit]</b><br><b>9. White Balance (HD)</b>                                                                                                                                                                                                                                                                                             |                 | <b>Purpose:</b> To set the CRTs white level in the HD mode.<br><b>Symptom:</b> Monochrome pictures have a color tint.                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Measuring Instrument                                                                                                                                                                                                                                                                                                                             | ----            | <ol style="list-style-type: none"> <li>1. Supply an HD Full White Raster signal to the DTV Inputs.</li> <li>2. Select the DTV Inputs (Input button)</li> <li>3. Activate the Adjustment mode, Video/Chroma Function.</li> <li>4. Set Item "19 COL" to 0.</li> <li>5. Adjust Items "6 RDRH" and "8 BDRH" for optimum white at the center of the screen.</li> <li>6. Reduce the input signal luminance to 25%.</li> <li>7. Adjust Items "9 CTRH" and "11 CTBH" for optimum white.</li> <li>8. Set the data for Item "19 COL" back to 31.</li> </ol> |
| Test Point                                                                                                                                                                                                                                                                                                                                       | ----            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Ext. Trigger                                                                                                                                                                                                                                                                                                                                     | -----           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Measuring Range                                                                                                                                                                                                                                                                                                                                  | ----            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Input Signal                                                                                                                                                                                                                                                                                                                                     | HD White Raster |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Input Terminal                                                                                                                                                                                                                                                                                                                                   | DTV Inputs      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <div style="border: 1px solid black; padding: 5px; margin-top: 20px;"> <b>CIRCUIT ADJUST MODE</b><br/>           Activate ..... MENU-0-1-5-7<br/>           Function .....AUDIO<br/>           Item No. ....VIDEO<br/>           Adjust Data .....ADJUST<br/>           Save Data ....ENTER<br/>           Exit .....MENU (twice)         </div> |                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

|                                                                                                                                                                                                                                                                                                                                                  |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>[CRT Circuit]</b><br><b>10. Cb, Cr Offset</b>                                                                                                                                                                                                                                                                                                 |                        | <b>Purpose</b> To set Cb and Cr color signal level.<br><b>Symptom:</b> Incorrect colors.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Measuring Instrument                                                                                                                                                                                                                                                                                                                             | ----                   | <b>NTSC Mode</b> <ol style="list-style-type: none"> <li>1. Supply an NTSC White Raster (25% luminance) signal to a Video Input.</li> <li>2. Activate the Adjust Mode, Video/Chroma Function</li> <li>3. Set Item "19 COL" data to 63.</li> <li>4. Adjust Items "56 CRO1" and "57 CBO1" for optimum white.</li> <li>5. Set Item "19 COL" data to 31.</li> <li>6. Save data and Exit the Service Mode.</li> </ol><br><b>HD MODE</b> <ol style="list-style-type: none"> <li>1. Supply an HD White Raster (25% luminance) signal to a Video Input.</li> <li>2. Activate the Adjust Mode, Video/Chroma Function</li> <li>3. Set Item "19 COL" data to 63.</li> <li>4. Adjust Items "56 CRO1" and "57 CBO1" for optimum white.</li> <li>5. Set Item "19 COL" data to 31.</li> <li>6. Save data and Exit the Service Mode.</li> </ol> |
| Test Point                                                                                                                                                                                                                                                                                                                                       | ----                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Ext. Trigger                                                                                                                                                                                                                                                                                                                                     | -----                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Measuring Range                                                                                                                                                                                                                                                                                                                                  | -----                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Input Signal                                                                                                                                                                                                                                                                                                                                     | White Raster (HD&NTSC) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Input Terminal                                                                                                                                                                                                                                                                                                                                   | Video & DTV Inputs     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <div style="border: 1px solid black; padding: 5px; margin-top: 20px;"> <b>CIRCUIT ADJUST MODE</b><br/>           Activate ..... MENU-0-1-5-7<br/>           Function .....AUDIO<br/>           Item No. ....VIDEO<br/>           Adjust Data .....ADJUST<br/>           Save Data ....ENTER<br/>           Exit .....MENU (twice)         </div> |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

|                                                             |                                                                                                                         |
|-------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| <p><b>[Video Circuit]</b></p> <p><b>11. Black Level</b></p> | <p><b>Purpose:</b> To set the black level of the picture.</p> <p><b>Symptom:</b> Excess or insufficient brightness.</p> |
|-------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|

|                             |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Measuring Instrument</b> | ----        | <ol style="list-style-type: none"> <li>1. Supply a Monoscope signal to a Video Input.</li> <li>2. Activate the Adjust Mode, Video/Chroma Function.</li> <li>3. Adjust Item “2 SBRT” so the 0% and 10% black levels on the gradation scale are the same. Make note of the data value.</li> <li>4. Press ENTER to save data.</li> <li>5. Use the “3” button to toggle to the HD and 480P modes.</li> <li>6. Set the data for “2 SBRT” in both modes to the NTSC data value (Step 3).</li> <li><b>NOTE:</b> Press ENTER to save data before switching modes.</li> <li>7. Exit the Service Mode.</li> </ol> |
| <b>Test Point</b>           | ----        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Ext. Trigger</b>         | -----       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Measuring Range</b>      | -----       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Input Signal</b>         | Monoscope   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Input Terminal</b>       | Video Input |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

**CIRCUIT ADJUST MODE**

Activate ..... MENU-0-1-5-7

Function .....AUDIO

Item No. ....VIDEO

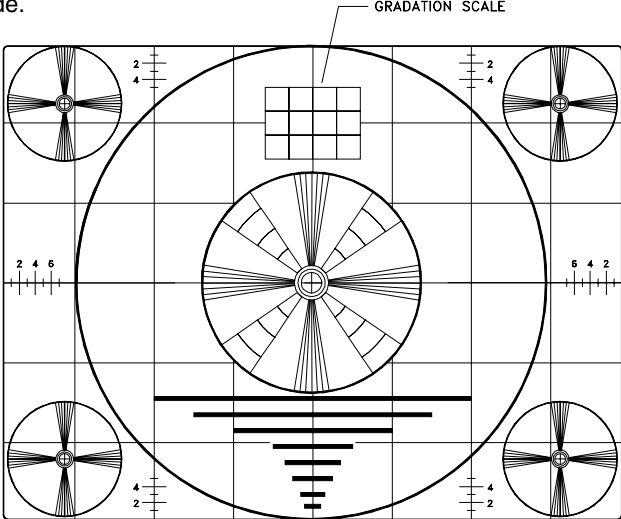
Adjust Data .....ADJUST

Save Data .... ENTER

Exit .....MENU (twice)

|     |     |     |     |
|-----|-----|-----|-----|
| 40% | 30% | 20% | 10% |
| 50% | 0%  | 0%  | 0%  |
| 60% | 70% | 80% | 90% |

GRADATION SCALE



|                                                              |                                                                                                                                  |
|--------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| <p><b>[Video Circuit]</b></p> <p><b>12. Sub Contrast</b></p> | <p><b>Purpose</b> To set overall beam current to its' optimum level.</p> <p><b>Symptom:</b> Excess or insufficient contrast.</p> |
|--------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|

|                             |                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------------------|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Measuring Instrument</b> | DC ma meter             | <p><b>Note: Activate the Expand mode (full screen).</b></p> <ol style="list-style-type: none"> <li>1. Supply a Grayscale signal to a RF Input.</li> <li>2. Activate the Adjust Mode, Video/Chroma Function.</li> <li>3. Select Item “1 SCT”, signal level automatically reduces.</li> <li>4. Connect a 3ma DC meter between DT connector pins 7 and 8. Positive lead to pin 7.</li> <li>5. Adjust Item “1 SCT” for 600µA ±10µA (575µA ±10µA on the WT-46809). Note the data value.</li> <li>6. Press Enter to save data.</li> <li>7. Remove the meter.</li> <li>8. Use the “3” button to toggle to the HD and 480P modes.</li> <li>9. Set the data for “1 SCT” in both modes to the NTSC data value (Step 5).</li> <li><b>NOTE:</b> Press ENTER to save data before switching modes.</li> <li>10. Save data and Exit the Service Mode.</li> </ol> |
| <b>Test Point</b>           | DT connector pins 7 & 8 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Ext. Trigger</b>         | -----                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Measuring Range</b>      | ----                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Input Signal</b>         | Grayscale               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Input Terminal</b>       | RF Input                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

**CIRCUIT ADJUST MODE**

Activate ..... MENU-0-1-5-7

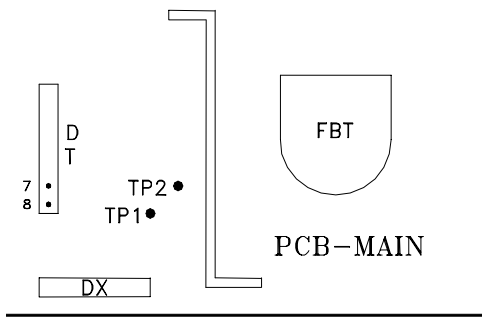
Function .....AUDIO

Item No. ....VIDEO

Adjust Data .....ADJUST

Save Data .... ENTER

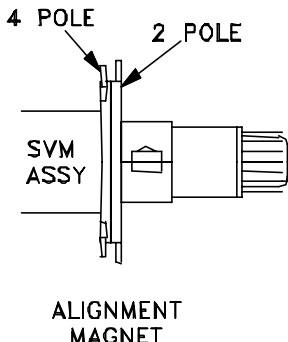
Exit .....MENU (twice)



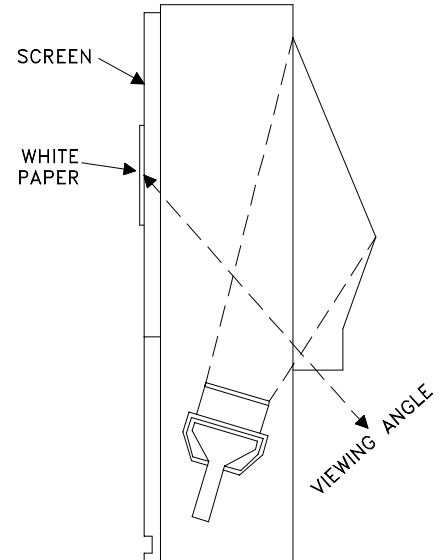
(REAR)

| <b>[Focus Circuit]</b><br><br><b>13. Dynamic Focus Preset</b>                                                                                                                                                                                                                                                                                   |             | <b>Purpose:</b> To improve edge focus.<br><br><b>Symptom:</b> Poor focus at the edges of the screen.                                                                                                                                                                                                                                                                                                                                                                                                          |      |       |      |   |     |     |   |     |     |      |       |      |   |      |     |   |      |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------|------|---|-----|-----|---|-----|-----|------|-------|------|---|------|-----|---|------|-----|
| Measuring Instrument                                                                                                                                                                                                                                                                                                                            | ----        | <ol style="list-style-type: none"> <li>1. Supply a Monoscope signal to a Video Input</li> <li>2. Activate the Convergence Mode.</li> <li>3. Select the DF Function under the Conv. Coarse Mode.</li> <li>4. Set Items "0 DFH" and "1 DFV" to the data values given in the DF Table.</li> <li>5. Press "6" to activate CONV-MISC</li> <li>6. Set "0 FPHS" and "1 DPHS" to data values given in the CONV-MISC Table.</li> <li>5. Exit the Conv. Mode.</li> </ol>                                                |      |       |      |   |     |     |   |     |     |      |       |      |   |      |     |   |      |     |
| Test Point                                                                                                                                                                                                                                                                                                                                      | ----        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |      |       |      |   |     |     |   |     |     |      |       |      |   |      |     |   |      |     |
| Ext. Trigger                                                                                                                                                                                                                                                                                                                                    | -----       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |      |       |      |   |     |     |   |     |     |      |       |      |   |      |     |   |      |     |
| Measuring Range                                                                                                                                                                                                                                                                                                                                 | ----        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |      |       |      |   |     |     |   |     |     |      |       |      |   |      |     |   |      |     |
| Input Signal                                                                                                                                                                                                                                                                                                                                    | Monoscope   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |      |       |      |   |     |     |   |     |     |      |       |      |   |      |     |   |      |     |
| Input Terminal                                                                                                                                                                                                                                                                                                                                  | Video Input |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |      |       |      |   |     |     |   |     |     |      |       |      |   |      |     |   |      |     |
| <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <b>CIRCUIT ADJUST MODE</b><br/>           Activate ..... MENU-0-1-5-7<br/>           Function .....AUDIO<br/>           Item No. ....VIDEO<br/>           Adjust Data .....ADJUST<br/>           Save Data .... ENTER<br/>           Exit .....MENU (twice)         </div> |             | <p><b>DF (MENU-0-1-5-9 then "AUDIO")</b></p> <table border="1"> <thead> <tr> <th>ITEM</th><th>ABBR.</th><th>DATA</th></tr> </thead> <tbody> <tr> <td>0</td><td>DFH</td><td>235</td></tr> <tr> <td>1</td><td>DFV</td><td>100</td></tr> </tbody> </table> <p><b>CONV MISC (MENU-0-1-5-9-6)</b></p> <table border="1"> <thead> <tr> <th>ITEM</th><th>ABBR.</th><th>DATA</th></tr> </thead> <tbody> <tr> <td>0</td><td>FPHS</td><td>200</td></tr> <tr> <td>1</td><td>DPHS</td><td>245</td></tr> </tbody> </table> | ITEM | ABBR. | DATA | 0 | DFH | 235 | 1 | DFV | 100 | ITEM | ABBR. | DATA | 0 | FPHS | 200 | 1 | DPHS | 245 |
| ITEM                                                                                                                                                                                                                                                                                                                                            | ABBR.       | DATA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |      |       |      |   |     |     |   |     |     |      |       |      |   |      |     |   |      |     |
| 0                                                                                                                                                                                                                                                                                                                                               | DFH         | 235                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |      |       |      |   |     |     |   |     |     |      |       |      |   |      |     |   |      |     |
| 1                                                                                                                                                                                                                                                                                                                                               | DFV         | 100                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |      |       |      |   |     |     |   |     |     |      |       |      |   |      |     |   |      |     |
| ITEM                                                                                                                                                                                                                                                                                                                                            | ABBR.       | DATA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |      |       |      |   |     |     |   |     |     |      |       |      |   |      |     |   |      |     |
| 0                                                                                                                                                                                                                                                                                                                                               | FPHS        | 200                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |      |       |      |   |     |     |   |     |     |      |       |      |   |      |     |   |      |     |
| 1                                                                                                                                                                                                                                                                                                                                               | DPHS        | 245                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |      |       |      |   |     |     |   |     |     |      |       |      |   |      |     |   |      |     |

| <b>[CRT Circuit]</b>                                    |                        | <b>Purpose</b> To set electrostatic focus to the optimum point.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |              |                 |     |                |       |                |      |                |
|---------------------------------------------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-----------------|-----|----------------|-------|----------------|------|----------------|
| <b>14. Electrostatic Focus &amp; (Alignment Magnet)</b> |                        | <b>Symptom:</b> Poor focus.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |              |                 |     |                |       |                |      |                |
| <b>Measuring Instrument</b>                             | ----                   | <b>Note:</b> <i>This adjustment must be performed after the Sub Contrast adjustment.</i><br><br><b>Alignment Magnet Adjustment (WS-55819 and WS-65819 Only)</b><br><i>This adjustment must be performed before Static Focus Adjustment</i> <ol style="list-style-type: none"><li>1. Supply a Crosshatch with Center Dot signal to a Video Input.</li><li>2. Select a Green raster using the table below.</li><li>3. Roughly adjust Green Focus VR.</li><li>4. Rotate Green Focus VR CCW so the center dot is about 10mm diameter.</li><li>5. Adjust the Green 4 Pole Magnet for the roundest center dot.</li><li>6. Set the Green Focus VR for optimum focus.</li><li>7. Repeat the procedure with a Red raster and adjust the Red 4 Pole Magnet.</li><li>8. Use silicon to lock the magnets in place.</li></ol><br><b>Static Focus Adjustment (All Models)</b> <ol style="list-style-type: none"><li>1. Supply a Monoscope signal to a Video Input</li><li>2. Activate A/V Reset</li><li>3. Select Red, Green or Blue rasters using the table below.</li><li>3. Set the Red, Green and Blue Focus VRs for optimum focus at the top center of the picture..</li></ol><br><b>Raster Color Selection</b> <table border="1"><tr><th>Color Raster</th><th>Activation Code</th></tr><tr><td>Red</td><td>MENU-0-1-5-9-1</td></tr><tr><td>Green</td><td>MENU-0-1-5-9-2</td></tr><tr><td>Blue</td><td>MENU-0-1-5-9-3</td></tr></table> | Color Raster | Activation Code | Red | MENU-0-1-5-9-1 | Green | MENU-0-1-5-9-2 | Blue | MENU-0-1-5-9-3 |
| Color Raster                                            | Activation Code        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |              |                 |     |                |       |                |      |                |
| Red                                                     | MENU-0-1-5-9-1         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |              |                 |     |                |       |                |      |                |
| Green                                                   | MENU-0-1-5-9-2         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |              |                 |     |                |       |                |      |                |
| Blue                                                    | MENU-0-1-5-9-3         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |              |                 |     |                |       |                |      |                |
| <b>Test Point</b>                                       | ----                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |              |                 |     |                |       |                |      |                |
| <b>Ext. Trigger</b>                                     | -----                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |              |                 |     |                |       |                |      |                |
| <b>Measuring Range</b>                                  | -----                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |              |                 |     |                |       |                |      |                |
| <b>Input Signal</b>                                     | Monoscope & Crosshatch |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |              |                 |     |                |       |                |      |                |
| <b>Input Terminal</b>                                   | Video Input            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |              |                 |     |                |       |                |      |                |

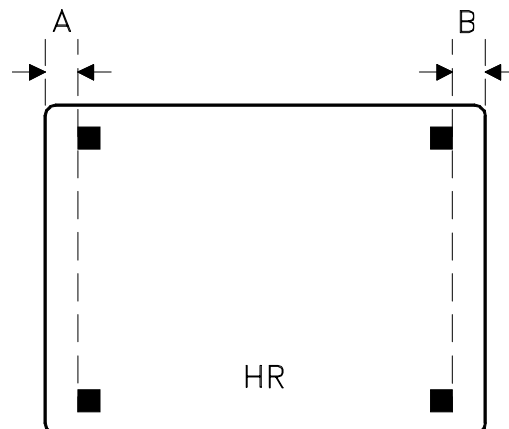


|                                                 |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-------------------------------------------------|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>[Video Circuit]</b><br><b>15. Lens Focus</b> |             | <b>Purpose:</b> To set the Lens position for optimum focus.<br><b>Symptom:</b> Poor focus                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Measuring Instrument                            | ----        | <b>Note:</b> This adjustment must follow item 6 (Electrostatic Focus). Perform this adjustment for RED, GREEN, and BLUE monochrome pictures.<br><br>1. Supply a VIDEO signal (Monoscope).<br>2. Cover the Red and Blue Lens (producing a green raster).<br>3. Adjust the Green Lens for best focus at the center of the Monoscope pattern.<br><br><b>Note:</b> Attach a white paper to the screen center. During adjustment, observe the picture on the screen from inside for easier adjustment.<br><br>4. Repeat Steps 2 and 3 for the Red and Blue monochrome pictures. |
| Test Point                                      | -----       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Ext. Trigger                                    | -----       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Measuring Range                                 | -----       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Input Signal                                    | Monoscope   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Input Terminal                                  | Video Input |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |



|                                                            |              |                                                                                                                                                                                                      |
|------------------------------------------------------------|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>[On Screen Display]</b><br><b>16.Character Position</b> |              | <b>Purpose</b> To position the character display horizontally.<br><b>Symptom:</b> Incorrect display position                                                                                         |
| Measuring Instrument                                       | ----         | 1. Supply a video signal to a Video Input<br>2. Enter the Adjustment Mode HR function.<br>3. Adjust so the width of (A) and (B) are equal as shown below.<br>3. Save data and exit the Service Mode. |
| Test Point                                                 | -----        |                                                                                                                                                                                                      |
| Ext. Trigger                                               | -----        |                                                                                                                                                                                                      |
| Measuring Range                                            | -----        |                                                                                                                                                                                                      |
| Input Signal                                               | Video Signal |                                                                                                                                                                                                      |
| Input Terminal                                             | Video Input  |                                                                                                                                                                                                      |

**CIRCUIT ADJUST MODE**  
 Activate ..... MENU-0-1-5-7  
 Function .....AUDIO  
 Item No. ....VIDEO  
 Adjust Data .....ADJUST  
 Save Data ....ENTER  
 Exit .....MENU (twice)



|                                                  |                                                                                                  |
|--------------------------------------------------|--------------------------------------------------------------------------------------------------|
| <b>[Conv/Defl]</b><br><b>18. Geometry Preset</b> | <b>Purpose:</b> To preset data controlling raster geometry<br><b>Symptom:</b> Raster distortion. |
|--------------------------------------------------|--------------------------------------------------------------------------------------------------|

|                      |                    |
|----------------------|--------------------|
| Measuring Instrument | -----              |
| Test Point           | -----              |
| Ext. Trigger         | -----              |
| Measuring Range      | -----              |
| Input Signal         | NTSC & HD          |
| Input Terminal       | Video & DTV Inputs |

**Note:** This procedure is usually only necessary if:

- An E2PROM is replaced in the Control or Convergence circuits.
- E2RESET or Convergence Reset has been activated.

**Procedure**

In the Circuit Adjustment and Coarse Convergence Modes set the data to the values given in the Tables below.

|                            |              |
|----------------------------|--------------|
| <b>CIRCUIT ADJUST MODE</b> |              |
| Activate .....             | MENU-0-1-5-7 |
| Function .....             | AUDIO        |
| Item No. ....              | VIDEO        |
| Adjust Data .....          | ADJUST       |
| Save Data ....             | ENTER        |
| Exit .....                 | MENU (twice) |

|                         |              |
|-------------------------|--------------|
| <b>CONVERGENCE MODE</b> |              |
| Activate .....          | MENU-0-1-5-9 |
| Misc. ....              | "6"          |
| Coarse.....             | "5"          |
| Fine .....              | "4"          |
| Color (R,G or B).....   | AUDIO        |
| Item No.....            | VIDEO        |
| Adjust/Move.....        | ADJUST       |
| Cursor Toggle.....      | ENTER        |
| Save & Exit.....        | MENU (twice) |

|                                                  |                         |
|--------------------------------------------------|-------------------------|
| <b>CONV. HD WITH NO SIGNAL</b>                   |                         |
| 1.                                               | MENU-0-1-7-0            |
| 2.                                               | Set DTV Port to 1080i   |
| 3.                                               | MENU (twice)            |
| 4.                                               | INPUT select DTV Inputs |
| 5.                                               | MENU-0-1-5-9            |
| <b>After adjusting, set the DTV Port to AUTO</b> |                         |

**DEFL JUNGLE (MENU-8-2-5-7)**

| Item # | Abbrev. | Data |    |
|--------|---------|------|----|
|        |         | NTSC | HD |
| 1      | HWID    | 29   | 33 |
| 2      | HKEY    | 31   | 40 |
| 3      | EWPT    | 31   | 31 |
| 5      | EWPB    | 39   | 40 |
| 7      | VHGT    | 38   | 24 |
| 8      | VLIN    | 9    | 9  |
| 9      | VSCN    | 0    | 0  |
| 20     | VPOS    | 0    | 31 |

**CONV GREEN (MENU-0-1-5-9)**

| Item # | Abbrev. | 46" Data |      | 55" Data |      | 65" Data |      |
|--------|---------|----------|------|----------|------|----------|------|
|        |         | SD       | HD   | SD       | HD   | SD       | HD   |
| 0      | HSTA    | 0        | 0    | 0        | 0    | 0        | 0    |
| 1      | SPCC    | 0        | 0    | 0        | 0    | 0        | 0    |
| 2      | HWID    | 0        | 0    | 0        | 0    | 0        | 0    |
| 3      | SKEW    | 0        | 0    | 0        | 0    | 0        | 0    |
| 4      | VSTA    | -43      | 0    | -45      | 0    | -45      | 0    |
| 5      | VKEY    | -15      | -15  | -30      | -30  | -25      | -25  |
| 6      | TBPC    | -250     | -200 | -310     | -260 | -310     | -250 |
| 7      | TILT    | 0        | 0    | 0        | 0    | 0        | 0    |

**CONV RED (MENU-0-1-5-9)**

| Item # | Abbrev. | 46" Data |      | 55" Data |      | 65" Data |      |
|--------|---------|----------|------|----------|------|----------|------|
|        |         | SD       | HD   | SD       | HD   | SD       | HD   |
| 0      | HSTA    | 40       | 40   | 40       | 40   | 0        | 0    |
| 1      | HLIN    | -250     | -230 | -250     | -230 | -230     | -200 |
| 2      | SKEW    | 0        | 0    | 0        | 0    | 0        | 0    |
| 3      | HWID    | -80      | -80  | -50      | -50  | -20      | -20  |
| 4      | HSBW    | 50       | 50   | 40       | 40   | 40       | 40   |
| 5      | VSTA    | 0        | 0    | 0        | 0    | 0        | 0    |
| 6      | VKEY    | -150     | -135 | -140     | -125 | -120     | -110 |
| 7      | TILT    | 0        | 0    | 0        | 0    | 0        | 0    |

**CONV BLUE (MENU-0-1-5-9)**

| Item # | Abbrev. | 46" Data |     | 55" Data |     | 65" Data |     |
|--------|---------|----------|-----|----------|-----|----------|-----|
|        |         | SD       | HD  | SD       | HD  | SD       | HD  |
| 0      | HSTA    | -40      | 220 | -40      | -40 | 0        | 0   |
| 1      | HLIN    | 250      | 0   | 250      | 230 | 230      | 200 |
| 2      | SKEW    | 0        | -20 | 0        | 0   | 0        | 0   |
| 3      | HWID    | -20      | -50 | 0        | 0   | 0        | 0   |
| 4      | HSBW    | -50      | 0   | -40      | -40 | -40      | -40 |
| 5      | VSTA    | 0        | 135 | 0        | 0   | 0        | 0   |
| 6      | VKEY    | 150      | 0   | 140      | 125 | 120      | 110 |
| 7      | TILT    | 0        | 0/0 | 0        | 0   | 0        | 0   |

**[Deflection Circuit]**

**19: Deflection Geometry  
Height & Width Adjustment**

**Purpose:** To set the height, width and linearity of the raster.

**Symptom:** Incorrect height, width and/or linearity.

|                      |                       |
|----------------------|-----------------------|
| Measuring Instrument | -----                 |
| Test Point           | -----                 |
| Ext. Trigger         | -----                 |
| Measuring Range      | -----                 |
| Input Signal         | Monoscope (NTSC & HD) |
| Input Terminal       | Video & DTV Inputs    |

**Preliminary:**

1. DO NOT change the initial values for "#8 VLIN" in the Defl. Jungle Function.
2. DO NOT exceed the following VHGT adjustment ranges:  
NTSC ... from -4 to +10  
HD ... FROM -10 TO +5

**NTSC Mode**

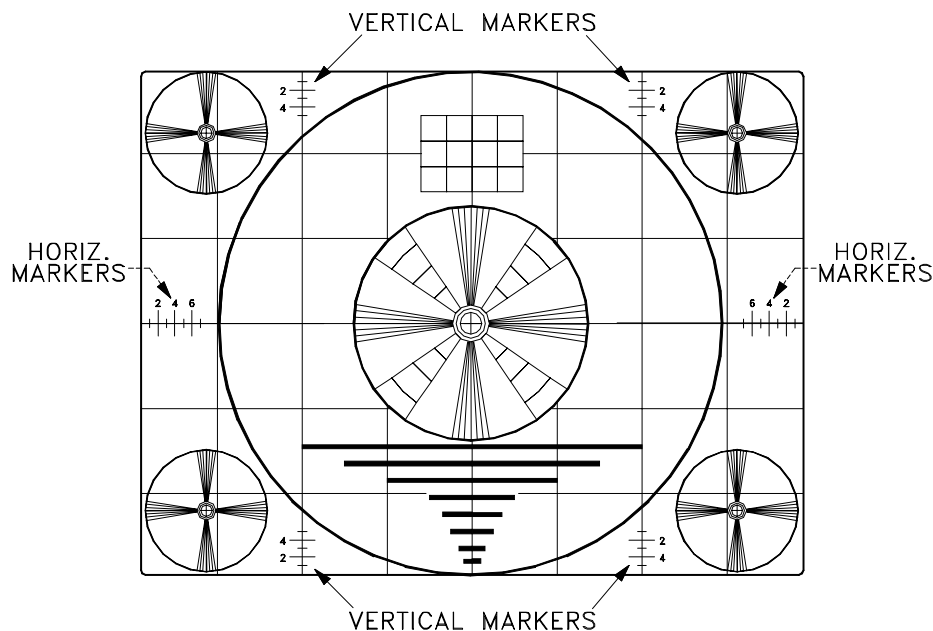
1. Supply an NTSC Monoscope signal to a Video Input.
2. Select the Monoscope as the signal source (Input button)
3. Activate the Adjustment Mode, Defl. Jungle Function.
4. Select and adjust each of the following items.
  - "7 VHGT" ... so the vertical marker sum = 4
  - "1 HWD" ... so the horizontal marker sum = 7
5. Save data and Exit the Service Mode.

**HD Mode**

1. Supply an HD Monoscope signal to the DTV HD Inputs.
2. Select the DTV Inputs as the signal source (Input button)
3. Activate the Service Mode, Defl. Jungle Function.
4. Select and adjust each of the following items.
  - "7 VHGT" ... so the vertical marker sum = 2
  - "1 HWD" ... so the horizontal marker sum = 10
5. Save data and Exit the Service Mode.

**CIRCUIT ADJUST MODE**

Activate ..... MENU-0-1-5-7  
Function .....AUDIO  
Item No. ....VIDEO  
Adjust Data .....ADJUST  
Save Data .... ENTER  
Exit .....MENU (twice)



|                                                                            |                                                                                                                                                       |
|----------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>[Convergence Circuit]</b><br><b>20. Convergence Geometry Adjustment</b> | <b>Purpose:</b> To set the Convergence circuit geometry adjustments.<br><b>Symptom:</b> Raster distortion at the top, bottom or sides of the picture. |
|----------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|

|                             |                               |
|-----------------------------|-------------------------------|
| <b>Measuring Instrument</b> | -----                         |
| <b>Test Point</b>           | -----                         |
| <b>Ext. Trigger</b>         | -----                         |
| <b>Measuring Range</b>      | -----                         |
| <b>Input Signal</b>         | NTSC -- None<br>HD -- HD sync |
| <b>Input Terminal</b>       | Video & DTV Inputs            |

**Note:** Deflection Circuit Geometry must be performed before this adjustment.

**NTSC mode**

1. Select a Video Input with no signal.
2. Activate the Convergence Mode, Coarse Green.
3. Adjust the Coarse Green Items shown below for straight crosshatch lines.
4. Select the Fine Green Mode, a Cursor is displayed on the crosshatch.
5. Use the Cursor to adjust for straight crosshatch lines.
6. Exit the Convergence Mode.

**HD mode**

1. Supply horizontal and vertical HD sync to the DTV Inputs.  
**Note:** If an HD signal is not available, use the Conv. HD With No Signal procedure.
2. Select the DTV Inputs as the signal source (Input button)
3. Enter the Convergence Mode, Coarse Green.
4. Repeat NTSC Steps 3 through 6 in the HD mode.

**CONVERGENCE MODE**

Activate .....MENU-0-1-5-9  
 Misc. .... "6"  
 Coarse..... "5"  
 Fine ..... "4"  
 Color (R,G or B).....AUDIO  
 Item No.....VIDEO  
 Adjust/Move.....ADJUST  
 Cursor Toggle.....ENTER  
 Save & Exit.....MENU (twice)

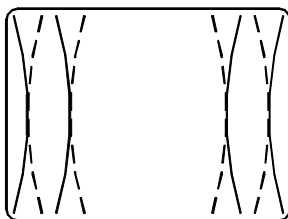
**CONV. HD WITH NO SIGNAL**

1. MENU-0-1-7-0
2. Set DTV Port to 1080i
3. MENU (twice)
4. INPUT select DTV Inputs
5. MENU-0-1-5-9

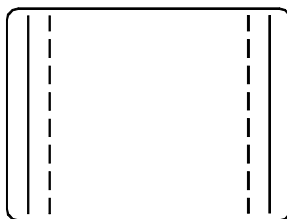
**After adjusting, set the  
DTV Port to AUTO**

**COARSE GREEN ADJUSTMENTS**

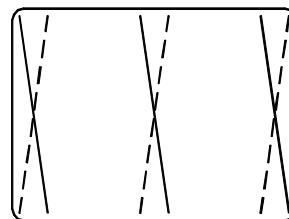
**1 SPCC**



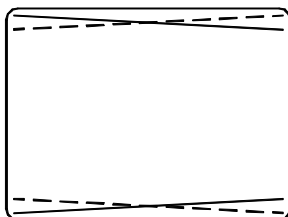
**2 HWID**



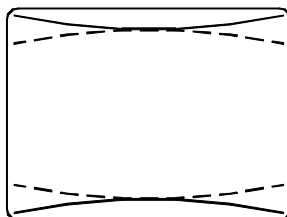
**3 SKEW**



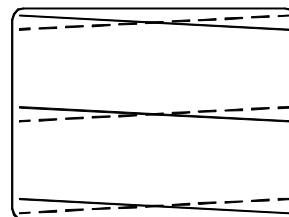
**5 VKEY**



**6 TBPC**



**7 TILT**



|                                                                                        |                                                                                                                                                 |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>[Convergence Circuit]</b></p> <p><b>21. Centering and Static Convergence</b></p> | <p><b>Purpose:</b> To converge red, green and blue at the center of the screen</p> <p><b>Symptom:</b> Color edging over the entire picture.</p> |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|

|                      |                                      |
|----------------------|--------------------------------------|
| Measuring Instrument | -----                                |
| Test Point           | -----                                |
| Ext. Trigger         | -----                                |
| Measuring Range      | -----                                |
| Input Signal         | NTSC -- Monoscope<br>HD -- Monoscope |
| Input Terminal       | Video & DTV Inputs                   |

**CONVERGENCE MODE**

Activate .....MENU-0-1-5-9  
Misc. .... "6"  
Coarse..... "5"  
Fine ..... "4"  
Color (R,G or B).....AUDIO  
Item No.....VIDEO  
Adjust/Move.....ADJUST  
Cursor Toggle.....ENTER  
Save & Exit.....MENU (twice)

**Preliminary**

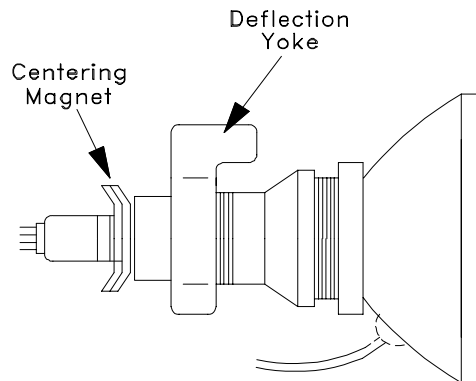
Degauss the shield cover and bracket unit of the CRT assembly and chassis.  
**DO NOT** degauss the CPM Assemblies.

**HD mode**

1. Supply an HD Monoscope signal to the DTV Inputs.
2. Select the DTV Inputs as the signal source (Input button).
3. Enter the Convergence Coarse mode.
4. Set the data for the "HSTA" and "VSTA" items for red, green and blue to 0.
5. In the Coarse Green mode:
  - Center the Green Raster using the Green Centering Magnet.
  - Rotate the Green Deflection Yoke to correct any tilt.
6. In the Coarse Red mode, use the Red Centering Magnet to converge red on the green at the center of screen. Correct any red tilt with the Red Deflection Yoke.
7. In the Coarse Blue mode, repeat Step 6 using the Blue Centering magnet and the Blue Deflection Yoke.
8. Exit the Convergence mode.

**SD mode**

1. Supply an NTSC Monoscope signal to a Video Input.
2. Select the Monoscope as the signal source (Input button).
3. Enter the Convergence Coarse mode.
4. In the Coarse Green mode, use Items "0 HSTA" and "4 VSTA" to center the green raster.
5. In the Coarse Red mode, use Items "0 HSTA" and "5 VSTA" to converge red on the green at the center of the screen.
6. In the Coarse Blue mode, repeat step 5 to converge the blue on the green.
7. Exit the Convergence mode.



|                                                               |                                                                                                                                                           |
|---------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>[Convergence Circuit]</b><br><b>22. Coarse Convergence</b> | <b>Purpose:</b> To converge red and blue on green at the edges of the screen.<br><b>Symptom:</b> Color edging at the top, bottom and sides of the screen. |
|---------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|

|                             |                               |
|-----------------------------|-------------------------------|
| <b>Measuring Instrument</b> | -----                         |
| <b>Test Point</b>           | -----                         |
| <b>Ext. Trigger</b>         | -----                         |
| <b>Measuring Range</b>      | -----                         |
| <b>Input Signal</b>         | NTSC -- None<br>HD -- HD sync |
| <b>Input Terminal</b>       | Video & HD Inputs             |

#### SD mode

1. Select an External Input with no signal.
2. Activate the Convergence Mode, Coarse Red.
3. Adjust the Items shown below to converge the red on the green.
4. Select Coarse Blue mode.
5. Adjust the Items shown below to converge the blue on the green.  
**Note:** If center convergence shifts, use red and blue Items "0 HSTA" and "5 VSTA" to correct the shift.
6. Exit the Convergence Mode.

#### HD mode

1. Supply an HD signal (sync only) to the DTV inputs, and use the "Input" button to select the DTV inputs as the source..  
(If no HD signal is available, use the Conv. HD with No Signal procedure)
2. Repeat SD Steps 2 through 5 in the HD mode.
3. Exit the Convergence mode.

#### CONVERGENCE MODE

Activate .....MENU-0-1-5-9  
 Misc. .... "6"  
 Coarse..... "5"  
 Fine ..... "4"  
 Color (R,G or B).....AUDIO  
 Item No.....VIDEO  
 Adjust/Move.....ADJUST  
 Cursor Toggle.....ENTER  
 Save & Exit.....MENU (twice)

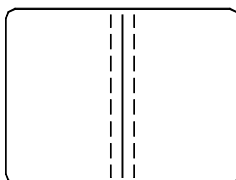
#### CONV. HD WITH NO SIGNAL

1. MENU-0-1-7-0
2. Set DTV Port to 1080i
3. MENU (twice)
4. INPUT select DTV Inputs
5. MENU-0-1-5-9

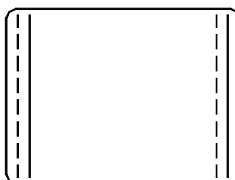
**After adjusting, set the DTV Port to AUTO**

#### COARSE CONVERGENCE RED & BLUE ADJUSTMENTS

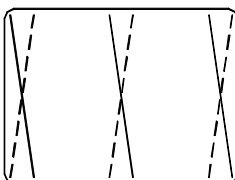
0 HSTA



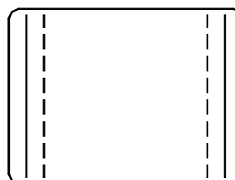
1 HLIN



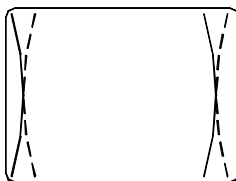
2 SKEW



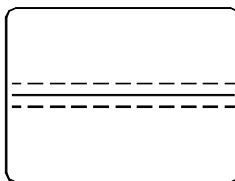
3 HWD



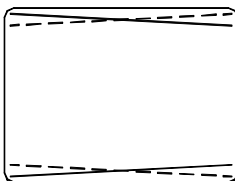
4 HSBW



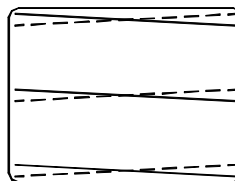
5 VSTA



6 VKEY



7 TILT



|                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>[Convergence Circuit]</b><br><b>23. Fine Convergence</b>                                                                                                                                                                                                                                                                                                                                                                                                       |                               | <b>Purpose:</b> To converge red, green and blue at the edges of the screen<br><b>Symptom:</b> Color edging at the edges of the picture.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Measuring Instrument                                                                                                                                                                                                                                                                                                                                                                                                                                              | ----                          | <b>SD Fine Adjustment</b> <ol style="list-style-type: none"> <li>1. Select an External Input, no signal.</li> <li>2. Activate the Convergence Mode, Fine Red.</li> <li>3. Use the Cursor to converge red on the green.</li> <li>4. Select the Fine Blue mode.</li> <li>5. Use the Cursor to converge blue on the green.</li> <li>6. Exit the Convergence mode.</li> </ol><br><b>HD Fine Adjustment</b> <ol style="list-style-type: none"> <li>1. Supply an HD signal (sync only) to the DTV inputs and select DTV with the "Audio" button.<br/>(If no HD signal is available, use the Conv. HD No Signal Procedure.)</li> <li>2. Repeat SD Steps 2 through 7, in the HD mode.</li> </ol> |
| Test Point                                                                                                                                                                                                                                                                                                                                                                                                                                                        | ----                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Ext. Trigger                                                                                                                                                                                                                                                                                                                                                                                                                                                      | -----                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Measuring Range                                                                                                                                                                                                                                                                                                                                                                                                                                                   | ----                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Input Signal                                                                                                                                                                                                                                                                                                                                                                                                                                                      | NTSC -- None<br>HD -- HD sync |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Input Terminal                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Video & DTV Inputs            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <div style="border: 1px solid black; padding: 5px; margin-top: 20px;"> <b><u>CONVERGENCE MODE</u></b><br/>           Activate .....MENU-0-1-5-9<br/>           Misc. .... "6"<br/>           Coarse..... "5"<br/>           Fine ..... "4"<br/>           Color (R,G or B).....AUDIO<br/>           Item No.....VIDEO<br/>           Adjust/Move.....ADJUST<br/>           Cursor Toggle.....ENTER<br/>           Save &amp; Exit.....MENU (twice)         </div> |                               | <div style="border: 1px solid black; padding: 5px; margin-top: 20px;"> <b><u>CONV. HD WITH NO SIGNAL</u></b> <ol style="list-style-type: none"> <li>1. MENU-0-1-7-0</li> <li>2. Set DTV Port to 1080i</li> <li>3. MENU (twice)</li> <li>4. INPUT select DTV Inputs</li> <li>5. MENU-0-1-5-9</li> </ol> <p style="text-align: center;"><b>After adjusting, set the<br/>DTV Port to AUTO</b></p> </div>                                                                                                                                                                                                                                                                                    |

## CHIP PARTS REPLACEMENT

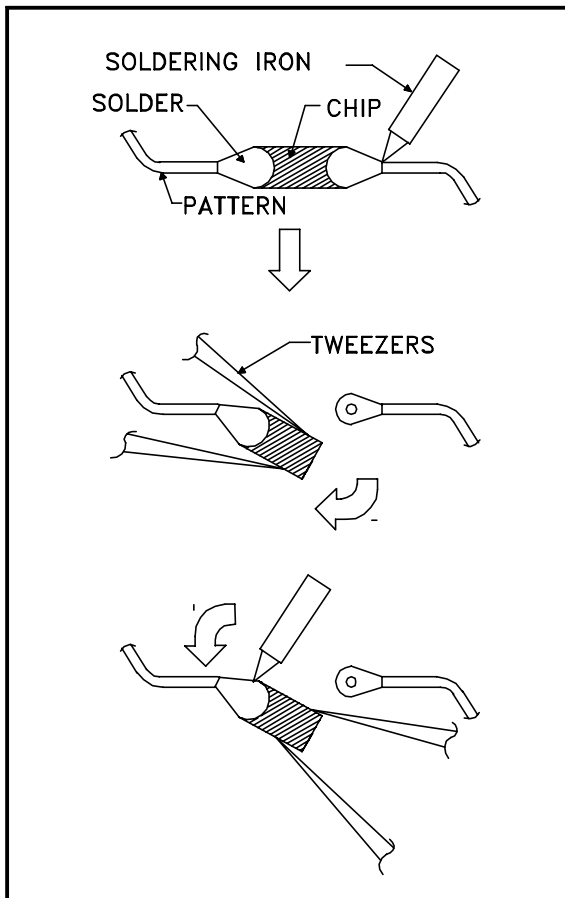
Some resistors, shorting jumpers (0 Ohm resistors), ceramic capacitors, transistors and diodes are chip parts. The following precautions should be taken when replacing these parts.

### Cautions:

1. Use a fine tipped, well insulated soldering iron (approximately 30 watts), and tweezers.
2. Melt the solder and remove the chip parts carefully so as not to tear the copper foil from the printed circuit board.
3. Discard removed chips; do not reuse them.
4. Do not apply heat for more than 3 (three) seconds to new chip parts.
5. Avoid using a rubbing stroke when soldering.
6. Take care not to scratch, or damage the chip parts when soldering.
7. Supplementary cementing is not required.

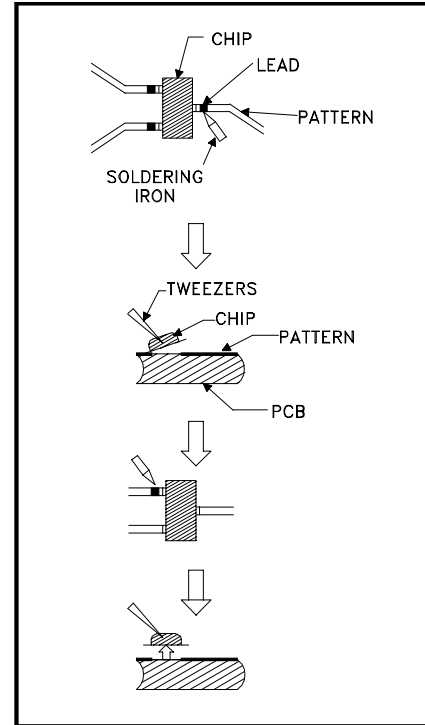
### Chip Parts Removal (Resistors, Capacitors, etc.)

1. Grasp the part with tweezers. Melt the solder at both sides alternately, and remove one side of the part with a twisting motion.
2. Melt the solder at the other side and remove the part.



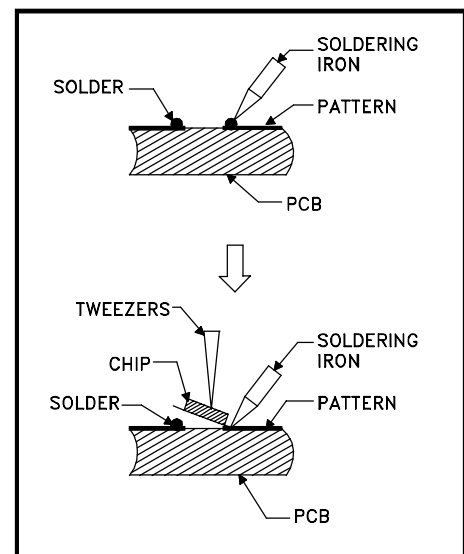
### Chip Parts Removal (Transistors)

1. Melt the solder of one lead and lift the side of that lead upward.
2. Simultaneously melt the solder of the other two leads and lift the part from the PCB.



### Replacement

1. Presolder the contact points on the circuit pattern.
2. Press the part downward with tweezers and apply the soldering iron as shown.



# REPLACEMENT PARTS

## Parts Ordering

To expedite delivery of replacement parts orders, specify the following:

1. Model Number/Serial Number
2. Part Number and description
3. Quantity

**Note:** Unless complete information is supplied, delay in processing of orders will result.

## Critical and Warranty Parts Designation

**Critical Electrical Components** are indicated by **Bold Type** in the Parts List, and in the schematic diagrams by shading. 

**Warranty Return Parts** are indicated in the Parts List with an (\*).

## Parts Tolerance Codes

Refer to the following chart for tolerance characteristics of electrical components.

| MARK        | B     | C      | D     | F   | G   | J   | K    |
|-------------|-------|--------|-------|-----|-----|-----|------|
| Tolerance % | ± 0.1 | ± 0.25 | ± 0.5 | ± 1 | ± 2 | ± 5 | ± 10 |

| MARK        | M    | N    | V    | X           | Z           | P            | Q           |
|-------------|------|------|------|-------------|-------------|--------------|-------------|
| Tolerance % | ± 20 | ± 30 | ± 10 | + 40<br>-20 | + 80<br>-20 | + 100<br>- 0 | + 30<br>-10 |

| MARK           | M     | N      | V     | X   | Z   |
|----------------|-------|--------|-------|-----|-----|
| Tolerance (pF) | ± 0.1 | ± 0.25 | ± 0.5 | ± 1 | ± 2 |

QUICK REFERENCE FOR COMMON REPLACEMENT PARTS

**CRT ASSEMBLIES**

| MODEL    | ASSY-CRT-RED | ASSY-CRT-GREEN | ASSY-CRT-BLUE |
|----------|--------------|----------------|---------------|
| WT-46809 | *251C212070  | *251C212080    | *251C212090   |
| WS-55809 | *251C212010  | *251C212020    | *251C212030   |
| WS-55819 | *251C212010  | *251C212020    | *251C212030   |
| WS-65809 | *251C212040  | *251C212050    | *251C212060   |
| WS-65819 | *251C212040  | *251C212050    | *251C212060   |

**REMOTE CONTROL**

290P103010

REMOTE CONTROL

**HIGH VOLTAGE / DEFLECTION COMPONENTS**

|       |            |                      |                                |
|-------|------------|----------------------|--------------------------------|
| Q5A31 | 261P071010 | HORIZ-OUT 2SC5418 RL |                                |
| Q5A51 | 261P082010 | HV-OUT 2SK2771-O1R   |                                |
| T5A51 | 334P278010 | TRANS-FLYBACK        |                                |
|       | 920P016010 | HV-BLOCK             |                                |
|       | 129P059050 | VR-FOCUS             |                                |
|       | 338P046030 | SVM COIL:G&B         | WT-46809 / WS-55809 / WS-65809 |
|       | 338P046080 | SVM COIL:RED         | WT-46809 / WS-55809 / WS-65809 |
|       | 338P051010 | SVM COIL:G           | WS-55819 / WS-65819            |
|       | 338P051020 | SVM COIL:RED         | WS-55819 / WS-65819            |
|       | 330P276020 | DEFL-YOKE            | WT-46809 / WS-55809 / WS-55819 |
|       | 330P276010 | DEFL-YOKE            | WS-65809 / WS-65819            |
|       | 453B035010 | CAP ANODE-RED        |                                |
|       | 453B035020 | CAP ANODE-B&G        |                                |

**MISCELLANEOUS**

| MODEL    | MIRROR     | LENTICULAR<br>SCREEN | FRESNEL<br>LENS |
|----------|------------|----------------------|-----------------|
| WT-46809 | 767D055070 | 491P118020           | 491P119020      |
| WS-55809 | 767D055040 | 491P125010           | 491P126010      |
| WS-55819 | 767D055040 | 491P125010           | 491P126010      |
| WS-65809 | 767D048090 | 491P105020           | 491P106020      |
| WS-65819 | 767D048090 | 491P105010           | 491P106010      |

**MODELS: WT-46809 / WS-55809 / WS-55819 / WS-65809 / WS-65819**

**[#] Model Legend: (1) WS-55809, (2) WS-55819, (3) WS-65809, (4) WS-65819, (5) WT-46809**

| Ref #                      | Part #            | Part Name & Description         | [#] | Ref #                                          | Part #            | Part Name & Description          | [#] |
|----------------------------|-------------------|---------------------------------|-----|------------------------------------------------|-------------------|----------------------------------|-----|
| <b>TUBES</b>               |                   |                                 |     | IC7C10                                         | 275P419010        | IC-C-MOS - SN74AHCT1G126DBV      |     |
|                            | 251C212010        | ASSY-CRT-RED                    | 1&2 | IC7D00                                         | 275P451010        | IC-C-MOS - TC74HC4066AFN-ELP     |     |
|                            | 251C212020        | ASSY-CRT-GREEN                  | 1&2 | IC7D01                                         | 275P560010        | IC - ADS931E A2D CONVERTER       |     |
|                            | 251C212030        | ASSY-CRT-BLUE                   | 1&2 | IC7D02                                         | 275P560010        | IC - ADS931E A2D CONVERTER       |     |
|                            | 251C212040        | ASSY-CRT-RED                    | 3&4 | IC7D03                                         | 275P560010        | IC - ADS931E A2D CONVERTER       |     |
|                            | 251C212050        | ASSY-CRT-GREEN                  | 3&4 | IC7D10                                         | 275P535010        | IC-C-MOS - TC74AC157FN-ELP       |     |
|                            | 251C212060        | ASSY-CRT-BLUE                   | 3&4 | IC7D11                                         | 275P535010        | IC-C-MOS - TC74AC157FN-ELP       |     |
|                            | 251C212070        | ASSY-CRT-RED                    | 5   | IC7E00                                         | 275P451010        | IC-C-MOS - TC74HC4066AFN-ELP     |     |
|                            | 251C212080        | ASSY-CRT-GREEN                  | 5   | IC7E01                                         | 275P560010        | IC - ADS931E A2D CONVERTER       |     |
|                            | 251C212090        | ASSY-CRT-BLUE                   | 5   | IC7E02                                         | 275P560010        | IC - ADS931E A2D CONVERTER       |     |
| <b>INTEGRATED CIRCUITS</b> |                   |                                 |     | IC7E03                                         | 275P560010        | IC - ADS931E A2D CONVERTER       |     |
| IC2C01                     | 275P496010        | IC-C-MOS - UPD64082GF-3BA       |     | IC7E10                                         | 275P535010        | IC-C-MOS - TC74AC157FN-ELP       |     |
| IC2C02                     | 275P531010        | IC-C-MOS - MSM54V16258B-45TS-K  |     | IC7E11                                         | 275P535010        | IC-C-MOS - TC74AC157FN-ELP       |     |
| IC2C03                     | 270P817010        | IC - L4931CDT33-TR              |     | IC7G01                                         | 275P247010        | IC-C-MOS - MB40C958VPFV          |     |
| IC2C04                     | 270P526020        | IC - MM1111XF                   |     | IC7G04                                         | 275P534010        | IC-C-MOS - TC74HCT574AFW-ELP     |     |
| IC2K01                     | 270P623010        | IC - CXA2069Q                   |     | IC7G05                                         | 275P534010        | IC-C-MOS - TC74HCT574AFW-ELP     |     |
| IC2L01                     | 270P623010        | IC - CXA2069Q                   |     | IC7H00                                         | 275P716010        | IC-C-MOS - uPD4516161AG5-A10-9NF |     |
| IC2V00                     | 270P663020        | IC - CXA2101AQ                  |     | IC7H01                                         | 275P716010        | IC-C-MOS - uPD4516161AG5-A10-9NF |     |
| IC2V01                     | 275P581010        | IC-C-MOS - TC7SET08FU           |     | IC7H02                                         | 275P436030        | IC-C-MOS - TMC57127PPM           |     |
| IC2X01                     | 270P781010        | IC - BA7078AF                   |     | IC7H03                                         | 275P439030        | IC-C-MOS - MSM534031E-**-TS-     |     |
| IC2X02                     | 270P781010        | IC - BA7078AF                   |     | IC7H04                                         | 270P506010        | IC - M51957BFP                   |     |
| IC2X06                     | 270P777010        | IC - TDA9177                    |     | IC7H05                                         | 263P384010        | IC-C-MOS - TC74HC221AF-EL        |     |
| IC2X07                     | 274P378010        | IC-C-MOS - TC74HC4053AF         |     | IC7H06                                         | 270P348010        | IC - TLC2932IPW                  |     |
| IC2X08                     | 275P423010        | IC-C-MOS - MAX4583CSE           |     | IC7H07                                         | 275P437020        | IC - SLA4028                     |     |
| IC2Y01                     | 274P378010        | IC-C-MOS - TC74HC4053AF         |     | IC7H08                                         | 270P348010        | IC - TLC2932IPW                  |     |
| IC2Y02                     | 275P423010        | IC-C-MOS - MAX4583CSE           |     | IC7H09                                         | 274P901010        | IC-C-MOS - TC74HCT7007AF-EL      |     |
| IC2Y03                     | 274P378010        | IC-C-MOS - TC74HC4053AF         |     | IC7H11                                         | 275P535010        | IC-C-MOS - TC74AC157FN-ELP       |     |
| IC2Y04                     | 275P423010        | IC-C-MOS - MAX4583CSE           |     | IC7H12                                         | 275P535010        | IC-C-MOS - TC74AC157FN-ELP       |     |
| IC2Y05                     | 274P378010        | IC-C-MOS - TC74HC4053AF         |     | IC7H13                                         | 275P535010        | IC-C-MOS - TC74AC157FN-ELP       |     |
| IC2Y06                     | 275P423010        | IC-C-MOS - MAX4583CSE           |     | IC7H14                                         | 275P535010        | IC-C-MOS - TC74AC157FN-ELP       |     |
| IC2Y07                     | 274P378010        | IC-C-MOS - TC74HC4053AF         |     | IC8A00                                         | 275P223010        | IC-C-MOS - CM0007AF              |     |
| IC2Y08                     | 275P423010        | IC-C-MOS - MAX4583CSE           |     | IC8A01                                         | 275P222020        | IC-C-MOS - M24C32MN6T            |     |
| IC2Y09                     | 274P378010        | IC-C-MOS - TC74HC4053AF         |     | IC8A02                                         | 270P348010        | IC - TLC2932IPW                  |     |
| IC2Y10                     | 275P423010        | IC-C-MOS - MAX4583CSE           |     | IC8A03                                         | 275P420010        | IC-C-MOS - MC74HC74AD            |     |
| IC3A01                     | 270P467010        | IC - TDA9855                    |     | <b>IC8C01</b>                                  | <b>267P150010</b> | <b>HIC - STK392-570</b>          |     |
| <b>IC3E01</b>              | <b>270P750010</b> | <b>IC - LA4663</b>              |     | <b>IC8C02</b>                                  | <b>267P150010</b> | <b>HIC - STK392-570</b>          |     |
| IC4A01                     | 270P664010        | IC - CXA2102Q                   |     | IC8D01                                         | 263P408020        | IC-C-MOS - UPD6376GS             |     |
| IC4A02                     | 270P575030        | IC - NJM78M09DLA - TE1          |     | IC8D02                                         | 263P408020        | IC-C-MOS - UPD6376GS             |     |
| IC4A03                     | 263P384010        | IC-C-MOS - TC74HC221AF-EL       |     | IC8D03                                         | 263P408020        | IC-C-MOS - UPD6376GS             |     |
| IC4B01                     | 270P261020        | IC - TDA8177                    |     | IC8D04                                         | 263P408020        | IC-C-MOS - UPD6376GS             |     |
| <b>IC5A00</b>              | <b>267P143020</b> | <b>KIC - MSPAD101</b>           |     | IC8D05                                         | 263P408020        | IC-C-MOS - UPD6376GS             |     |
| <b>IC5A01</b>              | <b>272P237010</b> | <b>IC - LA6324N</b>             |     | IC8D06                                         | 263P408020        | IC-C-MOS - UPD6376GS             |     |
| <b>IC5A02</b>              | <b>266P154010</b> | <b>IC - UPC393C</b>             |     | IC8D07                                         | 270P751010        | IC - TL084CD                     |     |
| <b>IC5A03</b>              | <b>270P704010</b> | <b>IC - LM4040BIZ-10.0</b>      |     | IC8D08                                         | 270P751010        | IC - TL084CD                     |     |
| IC5A05                     | 270P816010        | IC - NJM431L                    |     | IC8D09                                         | 270P751010        | IC - TL084CD                     |     |
| IC6M00                     | 270P658030        | IC - CXA2019AQ/T4               |     | IC8D10                                         | 272P603010        | IC - LM78L05ACZ/NJM78L05A        |     |
| IC6M90                     | 272P379020        | IC - LM1881MX (NSC)             |     | <b>IC9A20</b>                                  | <b>267P151010</b> | <b>HIC - STR-G6632</b>           |     |
| IC6P00                     | 270P658030        | IC - CXA2019AQ/T4               |     | <b>IC9A21</b>                                  | <b>270P816010</b> | <b>IC - NJM431L</b>              |     |
| IC6P90                     | 272P379020        | IC - LM1881MX (NSC)             |     | <b>IC9A50</b>                                  | <b>267P140020</b> | <b>HIC - STR-F6628</b>           |     |
| <b>IC7A00</b>              | <b>275P497050</b> | <b>IC-C-MOS - MN102H75K MB2</b> |     | <b>IC9A51</b>                                  | <b>267P062050</b> | <b>HIC - SE110N</b>              |     |
| IC7A01                     | 274P901010        | IC-C-MOS - TC74HCT7007AF-EL     |     | IC9C01                                         | 270P210010        | IC - NJM7809FA/AN7809F           |     |
| IC7C01                     | 270P880010        | IC - 24LC64I/SN                 |     | IC9C02                                         | 267P131010        | HIC - SI-3033C                   |     |
| IC7C02                     | 270P880010        | IC - 24LC64I/SN                 |     | IC9C03                                         | 270P575030        | IC - NJM78M09DLA - TE1           |     |
| IC7C03                     | 275P419010        | IC-C-MOS - SN74AHCT1G126DBV     |     | IC9C05                                         | 270P210010        | IC - NJM7809FA/AN7809F           |     |
| IC7C05                     | 270P645010        | IC - TDA8444T                   |     | <b>TRANSISTORS</b>                             |                   |                                  |     |
| IC7C07                     | 270P817010        | IC - L4931CDT33-TR              |     | <b>TR-CHIP Type (Listed by Generic Number)</b> |                   |                                  |     |
| IC7C08                     | 270P706020        | IC - MAX823REUK                 |     | <b>Type</b>                                    | <b>Part No.</b>   | <b>Description</b>               |     |
| IC7C09                     | 270P575020        | IC - NJM78M05DLA - TE1          |     | PNP                                            | 260P817010        | TR-CHIP - 2SA1037K-Q             |     |

**MODELS: WT-46809 / WS-55809 / WS-55819 / WS-65809 / WS-65819**

[#] Model Legend: (1) WS-55809, (2) WS-55819, (3) WS-65809, (4) WS-65819, (5) WT-46809

| Ref #                                      | Part #            | Part Name & Description       | [#] | Ref #        | Part #            | Part Name & Description        | [#] |
|--------------------------------------------|-------------------|-------------------------------|-----|--------------|-------------------|--------------------------------|-----|
| <b>Type</b>                                | <b>Part No.</b>   | <b>Description</b>            |     |              |                   | <b>DIODES</b>                  |     |
| PNP                                        | 260P817030        | TR-CHIP - 2SA1037K-S          |     | D2J08        | 264P484040        | DIODE - RD5.6FB3               |     |
| NPN                                        | 260P818010        | TR-CHIP - 2SC2412K-Q          |     | D2J09        | 264P484040        | DIODE - RD5.6FB3               |     |
| NPN                                        | 260P818030        | TR-CHIP - 2SC2412K-S          |     | D2V44        | 264P828010        | D-CHIP - DAN202U/MA142WK       |     |
| NPN                                        | 260P835030        | TR-CHIP - 2SC2413K-Q          |     | D2W01        | 264P828010        | D-CHIP - DAN202U/MA142WK       |     |
|                                            |                   |                               |     | D2W02        | 264P828010        | D-CHIP - DAN202U/MA142WK       |     |
|                                            |                   |                               |     | D2W03        | 264P501040        | DIODE - HZ3ALL                 |     |
| <b>Conventional Transistors (By Ref #)</b> |                   |                               |     | D4B01        | 264D056020        | DIODE - S5500D/EM1Z/ERB12-02RK |     |
| <b>Ref #</b>                               | <b>Part #</b>     | <b>Description</b>            |     | D4B04        | 264P045040        | DIODE - 1S24710M               |     |
| Q2W06                                      | 260P533010        | TR - 2SC3598-E                |     | D5A01        | 264P045040        | DIODE - 1S24710M               |     |
| Q2W09                                      | 260P533010        | TR - 2SC3598-E                |     | D5A02        | 264D056020        | DIODE - S5500D/EM1Z/ERB12-02RK |     |
| Q2W12                                      | 260P533010        | TR - 2SC3598-E                |     | D5A12        | 264P045040        | DIODE - 1S24710M               |     |
| Q4B01                                      | 260P559030        | TR - 2SC1740S-S               |     | D5A13        | 264P483070        | DIODE - RD5.1FB1               |     |
| Q5A01                                      | 260P788010        | TR - 2SC4690-O                |     | D5A14        | 264P045040        | DIODE - 1S24710M               |     |
| Q5A02                                      | 260P561020        | TR - 2SA1371-E                |     | D5A31        | 262P032010        | DIODE - FMV-G2GS               |     |
| Q5A03                                      | 260P386010        | TR - 2SC2230-GR               |     | D5A34        | 264P483070        | DIODE - RD5.1FB1               |     |
| Q5A04                                      | 260P559030        | TR - 2SC1740S-S               |     | D5A35        | 264P045040        | DIODE - 1S24710M               |     |
| Q5A05                                      | 260P560040        | TR - 2SA933S-S                |     | D5A36        | 264P045040        | DIODE - 1S24710M               |     |
| <b>Q5A06</b>                               | <b>260P560040</b> | <b>TR - 2SA933S-S</b>         |     | D5A37        | 264P521040        | DIODE - EU1A                   |     |
| Q5A07                                      | 261P123010        | TRANSISTOR - UNR4113-S - FORM |     | <b>D5A51</b> | <b>262P039010</b> | <b>DIODE - BYW96E/20</b>       |     |
| Q5A08                                      | 260P325030        | TR - 2SC2655-Y                |     | <b>D5A52</b> | <b>264P899010</b> | <b>DIODE - BYV26E</b>          |     |
| Q5A10                                      | 260P603010        | TR - DTA124ES/UN4112          |     | <b>D5A53</b> | <b>264P489010</b> | <b>DIODE - RD16FB1</b>         |     |
| Q5A31                                      | 261P071010        | TR - 2SC5418 RL               |     | <b>D5A54</b> | <b>264P724010</b> | <b>DIODE - STF14</b>           |     |
| Q5A32                                      | 260P587040        | TR - 2SC2333-M,L              |     | <b>D5A55</b> | <b>264P724010</b> | <b>DIODE - STF14</b>           |     |
| Q5A33                                      | 260P559030        | TR - 2SC1740S-S               |     | <b>D5A56</b> | <b>264P045040</b> | <b>DIODE - 1S24710M</b>        |     |
| Q5A34                                      | 260P561020        | TR - 2SA1371-E                |     | <b>D5A57</b> | <b>264P521040</b> | <b>DIODE - EU1A</b>            |     |
| Q5A35                                      | 260P386010        | TR - 2SC2230-GR               |     | <b>D5A58</b> | <b>264P045040</b> | <b>DIODE - 1S24710M</b>        |     |
| Q5A36                                      | 260P630010        | TR - 2SD2012                  |     | <b>D5A59</b> | <b>264P045040</b> | <b>DIODE - 1S24710M</b>        |     |
| Q5A37                                      | 260P559030        | TR - 2SC1740S-S               |     | <b>D5A60</b> | <b>264P489010</b> | <b>DIODE - RD16FB1</b>         |     |
| Q5A38                                      | 260P559030        | TR - 2SC1740S-S               |     | D5H01        | 264P045040        | DIODE - 1S24710M               |     |
| <b>Q5A51</b>                               | <b>261P082010</b> | <b>TR - 2SK2771-01R</b>       |     | D5H02        | 264P045040        | DIODE - 1S24710M               |     |
| Q5H08                                      | 260P559050        | TR - 2SC1740S-E               |     | D5H09        | 264P045040        | DIODE - 1S24710M               |     |
| Q5H09                                      | 260P559050        | TR - 2SC1740S-E               |     | D5K01        | 264P528030        | DIODE - RP1H                   |     |
| Q5H10                                      | 260P560040        | TR - 2SA933S-S                |     | D5K02        | 264P543010        | DIODE - EG01                   |     |
| Q5H11                                      | 260P573020        | TR - 2SB940A-P                |     | D5K03        | 264P543010        | DIODE - EG01                   |     |
| Q5H12                                      | 260P574020        | TR - 2SD1264A-P               |     | D5K10        | 264P528030        | DIODE - RP1H                   |     |
| Q5K00                                      | 260P664030        | TR - 2SC4636                  |     | D5K11        | 264P528030        | DIODE - RP1H                   |     |
| Q5K01                                      | 260P664030        | TR - 2SC4636                  |     | D6B00        | 264P573020        | DIODE - EG1A                   |     |
| Q5K02                                      | 260P559050        | TR - 2SC1740S-E               |     | D6B02        | 264P045040        | DIODE - 1S24710M               |     |
| Q5K03                                      | 260P560040        | TR - 2SA933S-S                |     | D6B03        | 264P457080        | DIODE - RD3.3EB1               |     |
| Q6B00                                      | 260P649020        | TR - 2SC3942                  |     | D6B04        | 264P045040        | DIODE - 1S24710M               |     |
| Q6B02                                      | 260P696010        | TR - 2SC3790                  |     | D6B06        | 264P045040        | DIODE - 1S24710M               |     |
| Q6B03                                      | 260P627020        | TR - 2SA1480-D,E              |     | D6G00        | 264P573020        | DIODE - EG1A                   |     |
| Q6B04                                      | 260P560040        | TR - 2SA933S-S                |     | D6G02        | 264P045040        | DIODE - 1S24710M               |     |
| Q6G00                                      | 260P649020        | TR - 2SC3942                  |     | D6G04        | 264P045040        | DIODE - 1S24710M               |     |
| Q6G02                                      | 260P696010        | TR - 2SC3790                  |     | D6G06        | 264P045040        | DIODE - 1S24710M               |     |
| Q6G03                                      | 260P627020        | TR - 2SA1480-D,E              |     | D6R00        | 264P573020        | DIODE - EG1A                   |     |
| Q6R00                                      | 260P649020        | TR - 2SC3942                  |     | D6R02        | 264P045040        | DIODE - 1S24710M               |     |
| Q6R02                                      | 260P696010        | TR - 2SC3790                  |     | D6R04        | 264P045040        | DIODE - 1S24710M               |     |
| Q6R03                                      | 260P627020        | TR - 2SA1480-D,E              |     | D6R06        | 264P045040        | DIODE - 1S24710M               |     |
| Q7B10                                      | 260P560040        | TR - 2SA933S-S                |     | D7C03        | 264P045040        | DIODE - 1S24710M               |     |
| Q7L21                                      | 260P559030        | TR - 2SC1740S-S               |     | D7C04        | 264P045040        | DIODE - 1S24710M               |     |
| Q7L22                                      | 260P560040        | TR - 2SA933S-S                |     | D7C07        | 264P828010        | D-CHIP - DAN202U/MA142WK       |     |
| <b>Q9A20</b>                               | <b>261P101010</b> | <b>TR - PHP21N06T</b>         |     | D7C08        | 264P828010        | D-CHIP - DAN202U/MA142WK       |     |
| Q9A21                                      | 260P559030        | TR - 2SC1740S-S               |     | D7H01        | 264P828010        | D-CHIP - DAN202U/MA142WK       |     |
| Q9A22                                      | 260P559030        | TR - 2SC1740S-S               |     | D7L21        | 264P212020        | D-LED - LN31GPH                |     |
| <b>Q9A23</b>                               | <b>261P101010</b> | <b>TR - PHP21N06T</b>         |     | D7L23        | 264P501050        | DIODE - HZ3BLL                 |     |
| Q9A50                                      | 260P416030        | TR - 2SC2274-F,K-F            |     | D8C01        | 264P045040        | DIODE - 1S24710M               |     |
| Q9A51                                      | 260P559030        | TR - 2SC1740S-S               |     | D8D03        | 264P486060        | DIODE - RD9.1FB3               |     |
| Q9A53                                      | 260P559030        | TR - 2SC1740S-S               |     | D8D04        | 264P486060        | DIODE - RD9.1FB3               |     |
| Q9A54                                      | 260P559030        | TR - 2SC1740S-S               |     |              |                   |                                |     |

**MODELS: WT-46809 / WS-55809 / WS-55819 / WS-65809 / WS-65819**

[#] Model Legend: (1) WS-55809, (2) WS-55819, (3) WS-65809, (4) WS-65819, (5) WT-46809

| Ref #        | Part #     | Part Name & Description | [#] | Ref # | Part #     | Part Name & Description | [#] |
|--------------|------------|-------------------------|-----|-------|------------|-------------------------|-----|
| D9A01        | 262P031010 | DIODE - D6SB80          |     | L2W79 | 409P923060 | EMI-F-CHIP - BLM21B272S |     |
| D9A21        | 264P899010 | DIODE - BYV26E          |     | L2X01 | 409P923060 | EMI-F-CHIP - BLM21B272S |     |
| D9A22        | 264P045040 | DIODE - 1S24710M        |     | L2X04 | 409P923060 | EMI-F-CHIP - BLM21B272S |     |
| D9A23        | 264P045040 | DIODE - 1S24710M        |     | L2Y01 | 409P923060 | EMI-F-CHIP - BLM21B272S |     |
| D9A24        | 264P045040 | DIODE - 1S24710M        |     | L2Y03 | 409P923060 | EMI-F-CHIP - BLM21B272S |     |
| D9A25        | 264P045040 | DIODE - 1S24710M        |     | L2Y04 | 409P923060 | EMI-F-CHIP - BLM21B272S |     |
| D9A26        | 264P045040 | DIODE - 1S24710M        |     | L2Y06 | 409P923060 | EMI-F-CHIP - BLM21B272S |     |
| D9A27        | 264P045040 | DIODE - 1S24710M        |     | L2Y07 | 409P923060 | EMI-F-CHIP - BLM21B272S |     |
| D9A30        | 264P566010 | DIODE - FMP-G12S        |     | L4A02 | 325C461030 | COIL-PEAKING - 10MH-K   |     |
| D9A31        | 264P045040 | DIODE - 1S24710M        |     | L4A03 | 409P777080 | EMI-F-CHIP - BLM21P221S |     |
| D9A32        | 264P487070 | DIODE - RD12FB1         |     | L4B01 | 321C130010 | COIL-RF - 2MH           |     |
| D9A33        | 264P628010 | DIODE - FMB-G14L        |     | L4B02 | 321C130090 | COIL-RF - 10MH-K        |     |
| D9A50        | 264P045040 | DIODE - 1S24710M        |     | L5A31 | 411P001010 | LEAD-FERRITE            |     |
| D9A52        | 264P045040 | DIODE - 1S24710M        |     | L5A33 | 333P052030 | COIL-HORIZ-LIN          | 3&4 |
| D9A53        | 264P045040 | DIODE - 1S24710M        |     | L5A33 | 333P059010 | COIL-HORIZ-LIN          | 125 |
| D9A54        | 264P045040 | DIODE - 1S24710M        |     | L5A34 | 321C130010 | COIL-RF - 2MH           |     |
| D9A55        | 264P045040 | DIODE - 1S24710M        |     | L5A51 | 321C141030 | COIL-RF - 10MH-K        |     |
| D9A56        | 264P566010 | DIODE - FMP-G12S        |     | L5A52 | 321C141030 | COIL-RF - 10MH-K        |     |
| D9A57        | 264P899010 | DIODE - BYV26E          |     | L5A53 | 321C141010 | COIL-RF - 6.8MH-M       |     |
| D9A58        | 264P588010 | DIODE - FML-G16S        |     | L5A54 | 411D009020 | CORE-FERRITE            |     |
| D9A64        | 264P045040 | DIODE - 1S24710M        |     | L5A55 | 411D009020 | CORE-FERRITE            |     |
| D9A65        | 264P045040 | DIODE - 1S24710M        |     | L5H41 | 325C110090 | COIL-PEAKING - 4.7MH-K  |     |
| D9A66        | 264P045040 | DIODE - 1S24710M        |     | L6B00 | 325C461010 | COIL-PEAKING - 6.8MH-K  |     |
| <b>COILS</b> |            |                         |     | L6B01 | 325C461040 | COIL-PEAKING - 12MH-K   |     |
| L1A06        | 409P923060 | EMI-F-CHIP - BLM21B272S |     | L6B02 | 325C460080 | COIL-PEAKING - 3.9MH-K  |     |
| L1A07        | 409P923060 | EMI-F-CHIP - BLM21B272S |     | L6B03 | 325C461030 | COIL-PEAKING - 10MH-K   |     |
| L1A13        | 409P923060 | EMI-F-CHIP - BLM21B272S |     | L6G00 | 325C461010 | COIL-PEAKING - 6.8MH-K  |     |
| L1A30        | 321C114010 | COIL-RF - 2200MH-J      |     | L6G01 | 325C461040 | COIL-PEAKING - 12MH-K   |     |
| L1A31        | 325C146030 | COIL-CHIP - 10MH-J      |     | L6G02 | 325C460080 | COIL-PEAKING - 3.9MH-K  |     |
| L1B06        | 409P923060 | EMI-F-CHIP - BLM21B272S |     | L6G03 | 325C461030 | COIL-PEAKING - 10MH-K   |     |
| L1B07        | 409P923060 | EMI-F-CHIP - BLM21B272S |     | L6M01 | 409P923060 | EMI-F-CHIP - BLM21B272S |     |
| L1B13        | 409P923060 | EMI-F-CHIP - BLM21B272S |     | L6M03 | 409P777080 | EMI-F-CHIP - BLM21P221S |     |
| L2C01        | 325C146050 | COIL-CHIP - 15MH-J      |     | L6M25 | 409P777080 | EMI-F-CHIP - BLM21P221S |     |
| L2C03        | 409P777080 | EMI-F-CHIP - BLM21P221S |     | L6P03 | 409P923060 | EMI-F-CHIP - BLM21B272S |     |
| L2C05        | 409P777080 | EMI-F-CHIP - BLM21P221S |     | L6P25 | 409P923060 | EMI-F-CHIP - BLM21B272S |     |
| L2C06        | 409P777080 | EMI-F-CHIP - BLM21P221S |     | L6R00 | 325C461010 | COIL-PEAKING - 6.8MH-K  |     |
| L2C32        | 409P777080 | EMI-F-CHIP - BLM21P221S |     | L6R01 | 325C461040 | COIL-PEAKING - 12MH-K   |     |
| L2D01        | 325C146030 | COIL-CHIP - 10MH-J      |     | L6R02 | 325C460080 | COIL-PEAKING - 3.9MH-K  |     |
| L2D02        | 325C146030 | COIL-CHIP - 10MH-J      |     | L6R03 | 325C461030 | COIL-PEAKING - 10MH-K   |     |
| L2D03        | 325C146030 | COIL-CHIP - 10MH-J      |     | L6R04 | 321C141010 | COIL-RF - 6.8MH-M       |     |
| L2J66        | 409P777080 | EMI-F-CHIP - BLM21P221S |     | L7A86 | 409P923060 | EMI-F-CHIP - BLM21B272S |     |
| L2K42        | 409P777080 | EMI-F-CHIP - BLM21P221S |     | L7B28 | 409P923060 | EMI-F-CHIP - BLM21B272S |     |
| L2K46        | 325C147080 | COIL-CHIP - 180MH-J     |     | L7B41 | 409P923060 | EMI-F-CHIP - BLM21B272S |     |
| L2K55        | 325C147080 | COIL-CHIP - 180MH-J     |     | L7C02 | 409P923060 | EMI-F-CHIP - BLM21B272S |     |
| L2K65        | 409P777080 | EMI-F-CHIP - BLM21P221S |     | L7C03 | 409P777050 | EMI-F-CHIP - BLM21B201S |     |
| L2K77        | 409P777080 | EMI-F-CHIP - BLM21P221S |     | L7C04 | 409P777050 | EMI-F-CHIP - BLM21B201S |     |
| L2L42        | 409P777080 | EMI-F-CHIP - BLM21P221S |     | L7C05 | 409P777050 | EMI-F-CHIP - BLM21B201S |     |
| L2L46        | 325C147080 | COIL-CHIP - 180MH-J     |     | L7C06 | 409P923060 | EMI-F-CHIP - BLM21B272S |     |
| L2L55        | 325C147080 | COIL-CHIP - 180MH-J     |     | L7C07 | 409P777050 | EMI-F-CHIP - BLM21B201S |     |
| L2V06        | 409P923060 | EMI-F-CHIP - BLM21B272S |     | L7C08 | 409P923060 | EMI-F-CHIP - BLM21B272S |     |
| L2V72        | 409P923060 | EMI-F-CHIP - BLM21B272S |     | L7C09 | 409P923060 | EMI-F-CHIP - BLM21B272S |     |
| L2W01        | 409P923060 | EMI-F-CHIP - BLM21B272S |     | L7C10 | 409P923060 | EMI-F-CHIP - BLM21B272S |     |
| L2W02        | 409P923060 | EMI-F-CHIP - BLM21B272S |     | L7C11 | 409P923060 | EMI-F-CHIP - BLM21B272S |     |
| L2W03        | 409P923060 | EMI-F-CHIP - BLM21B272S |     | L7C12 | 325C241030 | COIL-CHIP - 10MH-K      |     |
| L2W04        | 409P923060 | EMI-F-CHIP - BLM21B272S |     | L7D01 | 325C241030 | COIL-CHIP - 10MH-K      |     |
| L2W05        | 409P923060 | EMI-F-CHIP - BLM21B272S |     | L7D11 | 325C242010 | COIL-CHIP - 47MH-K      |     |
| L2W76        | 409P923060 | EMI-F-CHIP - BLM21B272S |     | L7D12 | 409P777020 | EMI-F-CHIP - BLM21A05   |     |
|              |            |                         |     | L7D13 | 325C241030 | COIL-CHIP - 10MH-K      |     |
|              |            |                         |     | L7D14 | 325C241030 | COIL-CHIP - 10MH-K      |     |
|              |            |                         |     | L7D15 | 325C241030 | COIL-CHIP - 10MH-K      |     |

**MODELS: WT-46809 / WS-55809 / WS-55819 / WS-65809 / WS-65819**

**[#] Model Legend: (1) WS-55809, (2) WS-55819, (3) WS-65809, (4) WS-65819, (5) WT-46809**

| Ref # | Part #     | Part Name & Description    | [#] | Ref #  | Part #     | Part Name & Description                | [#] |
|-------|------------|----------------------------|-----|--------|------------|----------------------------------------|-----|
| L7E01 | 325C241030 | COIL-CHIP - 10MH-K         |     | L9A64  | 321C130090 | COIL-RF - 10MH-K                       |     |
| L7E11 | 325C242010 | COIL-CHIP - 47MH-K         |     | L9A65  | 321C141070 | COIL-RF - 22MH-K                       |     |
| L7E12 | 409P777020 | EMI-F-CHIP - BLM21A05      |     | L9A66  | 321C141070 | COIL-RF - 22MH-K                       |     |
| L7E13 | 325C241030 | COIL-CHIP - 10MH-K         |     | L9A67  | 321C130090 | COIL-RF - 10MH-K                       |     |
| L7E14 | 325C241030 | COIL-CHIP - 10MH-K         |     | L9D00  | 351P203010 | LINE-FILTER - SS35V-45022              |     |
| L7E15 | 325C241030 | COIL-CHIP - 10MH-K         |     | L9D01  | 351P203010 | LINE-FILTER - SS35V-45022              |     |
| L7G00 | 325C242050 | COIL-CHIP - 100MH-K        |     | LC7D02 | 409P875090 | EMI-F-CHIP - ELKE103FA                 |     |
| L7G10 | 325C242050 | COIL-CHIP - 100MH-K        |     | LC7D05 | 409P875090 | EMI-F-CHIP - ELKE103FA                 |     |
| L7G11 | 325C241030 | COIL-CHIP - 10MH-K         |     | LC7D10 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S |     |
| L7G12 | 325C241030 | COIL-CHIP - 10MH-K         |     | LC7D11 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S |     |
| L7H10 | 325C241030 | COIL-CHIP - 10MH-K         |     | LC7D12 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S |     |
| L7H11 | 409P777080 | EMI-F-CHIP - BLM21P221S    |     | LC7D13 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S |     |
| L7H12 | 325C241030 | COIL-CHIP - 10MH-K         |     | LC7D14 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S |     |
| L7H13 | 325C241030 | COIL-CHIP - 10MH-K         |     | LC7E10 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S |     |
| L7H14 | 325C241030 | COIL-CHIP - 10MH-K         |     | LC7E11 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S |     |
| L7H15 | 325C241030 | COIL-CHIP - 10MH-K         |     | LC7E12 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S |     |
| L7H16 | 325C241030 | COIL-CHIP - 10MH-K         |     | LC7E13 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S |     |
| L7H17 | 325C241030 | COIL-CHIP - 10MH-K         |     | LC7E14 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S |     |
| L7H19 | 409P777080 | EMI-F-CHIP - BLM21P221S    |     | LC7G01 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S |     |
| L7H20 | 325C241030 | COIL-CHIP - 10MH-K         |     | LC7G02 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S |     |
| L7H30 | 325C241030 | COIL-CHIP - 10MH-K         |     | LC7G03 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S |     |
| L7H31 | 325C241030 | COIL-CHIP - 10MH-K         |     | LC7G04 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S |     |
| L7H32 | 409P777080 | EMI-F-CHIP - BLM21P221S    |     | LC7G05 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S |     |
| L7H38 | 325C241030 | COIL-CHIP - 10MH-K         |     | LC7G06 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S |     |
| L7H40 | 325C241030 | COIL-CHIP - 10MH-K         |     | LC7G07 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S |     |
| L7H41 | 409P777080 | EMI-F-CHIP - BLM21P221S    |     | LC7G08 | 409P875090 | EMI-F-CHIP - ELKE103FA                 |     |
| L7H42 | 409P777080 | EMI-F-CHIP - BLM21P221S    |     | LC7G09 | 409P875090 | EMI-F-CHIP - ELKE103FA                 |     |
| L7H50 | 409P777080 | EMI-F-CHIP - BLM21P221S    |     | LC7G10 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S |     |
| L7H60 | 325C241030 | COIL-CHIP - 10MH-K         |     | LC7G11 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S |     |
| L7H70 | 325C241030 | COIL-CHIP - 10MH-K         |     | LC7G12 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S |     |
| L7H80 | 325C241030 | COIL-CHIP - 10MH-K         |     | LC7G13 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S |     |
| L7K01 | 325C121030 | COIL-PEAKING - 10MH-K      |     | LC7G14 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S |     |
| L8A00 | 409P777080 | EMI-F-CHIP - BLM21P221S    |     | LC7G15 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S |     |
| L8A01 | 409P777080 | EMI-F-CHIP - BLM21P221S    |     | LC7J03 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S |     |
| L8A02 | 409P777080 | EMI-F-CHIP - BLM21P221S    |     | LC7J04 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S |     |
| L8A03 | 409P777080 | EMI-F-CHIP - BLM21P221S    |     | LC7J05 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S |     |
| L8A04 | 325C461030 | COIL-PEAKING - 10MH-K      |     | LC7J10 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S |     |
| L8C01 | 321C142030 | COIL-RF - 68MH-K           |     | LC7J13 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S |     |
| L8C02 | 321C142030 | COIL-RF - 68MH-K           |     | LC7J14 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S |     |
| L8C03 | 321C142030 | COIL-RF - 68MH-K           |     | LC7J15 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S |     |
| L8C04 | 321C142030 | COIL-RF - 68MH-K           |     | LC8A21 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S |     |
| L8D02 | 409P777080 | EMI-F-CHIP - BLM21P221S    |     | LC8A22 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S |     |
| L8D03 | 409P777080 | EMI-F-CHIP - BLM21P221S    |     | LC8A23 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S |     |
| L8D04 | 409P777080 | EMI-F-CHIP - BLM21P221S    |     | LC8A25 | 409P876020 | EMI-F-CHIP - CNF20C470S/CKD510JB1H470S |     |
| L9A02 | 351P209010 | LINE FILTER - SU16VD-40010 |     | LF7D00 | 409P901010 | LP-FILTER - 14MHZ SMD                  |     |
| L9A20 | 411D009020 | CORE-FERRITE               |     | LF7D01 | 409P901010 | LP-FILTER - 14MHZ SMD                  |     |
| L9A21 | 411D009020 | CORE-FERRITE               |     | LF7D02 | 409P901010 | LP-FILTER - 14MHZ SMD                  |     |
| L9A22 | 321C141070 | COIL-RF - 22MH-K           |     | LF7E00 | 409P901010 | LP-FILTER - 14MHZ SMD                  |     |
| L9A23 | 321C141070 | COIL-RF - 22MH-K           |     | LF7E01 | 409P901010 | LP-FILTER - 14MHZ SMD                  |     |
| L9A24 | 321C141070 | COIL-RF - 22MH-K           |     | LF7E02 | 409P901010 | LP-FILTER - 14MHZ SMD                  |     |
| L9A50 | 411D009020 | CORE-FERRITE               |     | LF7G00 | 409P901010 | LP-FILTER - 14MHZ SMD                  |     |
| L9A51 | 411D009020 | CORE-FERRITE               |     | LF7G01 | 409P901010 | LP-FILTER - 14MHZ SMD                  |     |
| L9A52 | 411D009020 | CORE-FERRITE               |     | LF7G02 | 409P901010 | LP-FILTER - 14MHZ SMD                  |     |
| L9A53 | 321C141010 | COIL-RF - 6.8MH-M          |     |        |            |                                        |     |
| L9A54 | 411D009020 | CORE-FERRITE               |     |        |            |                                        |     |
| L9A55 | 321C142030 | COIL-RF - 68MH-K           |     |        |            |                                        |     |
| L9A56 | 411D009020 | CORE-FERRITE               |     |        |            |                                        |     |
| L9A57 | 321C141070 | COIL-RF - 22MH-K           |     |        |            |                                        |     |
| L9A62 | 321C141010 | COIL-RF - 6.8MH-M          |     |        |            |                                        |     |
| L9A63 | 321C141010 | COIL-RF - 6.8MH-M          |     |        |            |                                        |     |

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**MODELS: WT-46809 / WS-55809 / WS-55819 / WS-65809 / WS-65819**

[#] Model Legend: (1) WS-55809, (2) WS-55819, (3) WS-65809, (4) WS-65819, (5) WT-46809

| Ref #                                            | Part #                | Part Name & Description          | [#]             | Ref #                                 | Part #          | Part Name & Description | [#] |
|--------------------------------------------------|-----------------------|----------------------------------|-----------------|---------------------------------------|-----------------|-------------------------|-----|
| <b>VARIABLE RESISTORS</b>                        |                       |                                  |                 | <b>Common Resistors ( By Ref. # )</b> |                 |                         |     |
| 129P059050                                       | VR-FOCUS - MHF116-50W |                                  |                 | <b>Ref.</b>                           | <b>Part No.</b> | <b>Description</b>      |     |
| RV9D00                                           | 265P100010            | VARISTOR - ERZV10D271/ERZVEAV271 |                 | R2J70                                 | 103P711080      | R-CARBON - 1/4W 270-J   |     |
| <b>RESISTORS</b>                                 |                       |                                  |                 | R2J71                                 | 103P711030      | R-CARBON - 1/4W 100-J   |     |
| <b>R-M-CHIP Type Resistors (Listed by Value)</b> |                       |                                  |                 | R2W13                                 | 103P460040      | R-METAL - 1/4W 130-F    |     |
| <b>Value</b>                                     | <b>Part No.</b>       | <b>Value</b>                     | <b>Part no.</b> | R2W17                                 | 103C171040      | R-METAL - 1W 120-J      |     |
| 1/16W 00HM                                       | 103P509050            | 1/16W 2.4K-F                     | 103P493040      | R2W21                                 | 103P460040      | R-METAL - 1/4W 130-F    |     |
| 1/10W 10-J                                       | 103P400010            | 1/16W 2.7K-F                     | 103P493050      | R2W25                                 | 103C171040      | R-METAL - 1W 120-J      |     |
| 1/10W 22-J                                       | 103P400050            | 1/16W 2.7K-J                     | 103P503000      | R2W37                                 | 103P460050      | R-METAL - 1/4W 150-F    |     |
| 1/16W 22-J                                       | 103P500050            | 1/16W 3.3K-F                     | 103P493070      | R2W63                                 | 103C171040      | R-METAL - 1W 120-J      |     |
| 1/10W 33-J                                       | 103P400070            | 1/16W 3.3K-J                     | 103P503010      | R3E02                                 | 103P712080      | R-CARBON - 1/4W 1.8K-J  |     |
| 1/10W 39-J                                       | 103P400080            | 1/16W 3.9K-F                     | 103P493090      | R3E04                                 | 103P712080      | R-CARBON - 1/4W 1.8K-J  |     |
| 1/16W 39-J                                       | 103P500080            | 1/16W 3.9K-J                     | 103P503020      | R3E05                                 | 103P714060      | R-CARBON - 1/4W 56K-J   |     |
| 1/16W 47-J                                       | 103P500090            | 1/16W 4.3K-F                     | 103P494000      | R3E06                                 | 103P713030      | R-CARBON - 1/4W 4.7K-J  |     |
| 1/10W 56-J                                       | 103P401000            | 1/16W 4.7K-F                     | 103P494010      | R3E15                                 | 103P713050      | R-CARBON - 1/4W 6.8K-J  |     |
| 1/16W 56-J                                       | 103P501000            | 1/16W 4.7K-J                     | 103P503030      | R3E16                                 | 103P713050      | R-CARBON - 1/4W 6.8K-J  |     |
| 1/16W 100-J                                      | 103P501030            | 1/16W 5.1K-F                     | 103P494020      | R4B02                                 | 103P463060      | R-METAL - 1/4W 3K-F     | 125 |
| 1/16W 120-J                                      | 103P501040            | 1/16W 5.6K-J                     | 103P503040      | R4B05                                 | 103P713090      | R-CARBON - 1/4W 15K-J   |     |
| 1/10W 150-J                                      | 103P401050            | 1/16W 6.2K-F                     | 103P494040      | R4B10                                 | 103C188050      | R-METAL - 2W 2.7-J      |     |
| 1/16W 150-J                                      | 103P501050            | 1/16W 6.8K-F                     | 103P494050      | R4B12                                 | 103C188040      | R-METAL - 2W 2.2-J      |     |
| 1/16W 160-F                                      | 103P490060            | 1/16W 6.8K-J                     | 103P503050      | R4B17                                 | 103P712010      | R-CARBON - 1/4W 470-J   |     |
| 1/16W 180-F                                      | 103P490070            | 1/16W 8.2K-F                     | 103P494070      | R4B20                                 | 103P711090      | R-CARBON - 1/4W 330-J   |     |
| 1/16W 180-J                                      | 103P501060            | 1/16W 8.2K-J                     | 103P503060      | R4B23                                 | 103P711070      | R-CARBON - 1/4W 220-J   |     |
| 1/16W 220-J                                      | 103P501070            | 1/16W 10K-F                      | 103P494090      | R4B24                                 | 103P712050      | R-CARBON - 1/4W 1K-J    |     |
| 1/16W 240-F                                      | 103P491000            | 1/16W 10K-J                      | 103P503070      | R4B25                                 | 103P712050      | R-CARBON - 1/4W 1K-J    |     |
| 1/16W 270-J                                      | 103P501080            | 1/16W 12K-J                      | 103P503080      | R4B26                                 | 103P713000      | R-CARBON - 1/4W 2.7K-J  |     |
| 1/10W 300-F                                      | 103P471020            | 1/16W 13K-F                      | 103P495020      | R4B27                                 | 103P714080      | R-CARBON - 1/4W 82K-J   |     |
| 1/16W 330-F                                      | 103P491030            | 1/16W 15K-F                      | 103P495030      | R4B28                                 | 103P464040      | R-METAL - 1/4W 2.4K-F   | 1-4 |
| 1/16W 330-J                                      | 103P501090            | 1/16W 15K-J                      | 103P503090      | R4B28                                 | 103P464060      | R-METAL - 1/4W 7.5K-F   | 5   |
| 1/16W 470-J                                      | 103P502010            | 1/16W 18K-J                      | 103P504000      | R5A01                                 | 103P712050      | R-CARBON - 1/4W 1K-J    |     |
| 1/16W 510-F                                      | 103P491080            | 1/16W 22K-F                      | 103P495070      | R5A02                                 | 103P712090      | R-CARBON - 1/4W 2.2K-J  |     |
| 1/10W 560-J                                      | 103P402020            | 1/16W 22K-J                      | 103P504010      | R5A03                                 | 103P713010      | R-CARBON - 1/4W 3.3K-J  |     |
| 1/16W 560-F                                      | 103P491090            | 1/16W 24K-F                      | 103P495080      | R5A04                                 | 103P713090      | R-CARBON - 1/4W 15K-J   |     |
| 1/16W 560-J                                      | 103P502020            | 1/16W 27K-F                      | 103P495090      | R5A05                                 | 103P713070      | R-CARBON - 1/4W 10K-J   |     |
| 1/16W 620-F                                      | 103P492000            | 1/16W 27K-J                      | 103P504020      | R5A06                                 | 103P713070      | R-CARBON - 1/4W 10K-J   |     |
| 1/16W 680-F                                      | 103P492010            | 1/16W 33K-F                      | 103P496010      | R5A07                                 | 103P714030      | R-CARBON - 1/4W 33K-J   |     |
| 1/16W 680-J                                      | 103P502030            | 1/16W 33K-J                      | 103P504030      | R5A08                                 | 103C194010      | R-METAL - 3W 22K-J      |     |
| 1/10W 820-J                                      | 103P402040            | 1/16W 36K-F                      | 103P496020      | R5A09                                 | 103P714040      | R-CARBON - 1/4W 39K-J   |     |
| 1/16W 820-F                                      | 103P492030            | 1/16W 47K-F                      | 103P496050      | R5A10                                 | 103P714040      | R-CARBON - 1/4W 39K-J   |     |
| 1/16W 820-J                                      | 103P502040            | 1/16W 47K-J                      | 103P504050      | R5A11                                 | 103P713070      | R-CARBON - 1/4W 10K-J   |     |
| 1/10W 1K-J                                       | 103P402050            | 1/16W 56K-J                      | 103P504060      | R5A12                                 | 103P712050      | R-CARBON - 1/4W 1K-J    |     |
| 1/16W 1K-F                                       | 103P492050            | 1/16W 68K-J                      | 103P504070      | R5A15                                 | 103P713010      | R-CARBON - 1/4W 3.3K-J  |     |
| 1/16W 1K-J                                       | 103P502050            | 1/16W 75K-J                      | 103P509090      | R5A16                                 | 103P713090      | R-CARBON - 1/4W 15K-J   |     |
| 1/16W 1.2K-F                                     | 103P492070            | 1/16W 82K-J                      | 103P504080      | R5A17                                 | 103P712050      | R-CARBON - 1/4W 1K-J    |     |
| 1/16W 1.2K-J                                     | 103P502060            | 1/16W 100K-F                     | 103P497030      | R5A18                                 | 103P711030      | R-CARBON - 1/4W 100-J   |     |
| 1/16W 1.3K-F                                     | 103P492080            | 1/16W 100K-J                     | 103P504090      | R5A19                                 | 103P461070      | R-METAL - 1/4W 470-F    |     |
| 1/10W 1.5K-J                                     | 103P402070            | 1/16W 120K-J                     | 103P505000      | R5A20                                 | 103P714050      | R-CARBON - 1/4W 47K-J   |     |
| 1/16W 1.5K-F                                     | 103P492090            | 1/16W 150K-J                     | 103P505010      | R5A21                                 | 103P713000      | R-CARBON - 1/4W 2.7K-J  |     |
| 1/16W 1.5K-J                                     | 103P502070            | 1/16W 270K-J                     | 103P505040      | R5A22                                 | 103P714010      | R-CARBON - 1/4W 22K-J   |     |
| 1/16W 1.6K-F                                     | 103P493000            | 1/16W 330K-J                     | 103P505050      | R5A23                                 | 103P713030      | R-CARBON - 1/4W 4.7K-J  |     |
| 1/10W 1.8K-J                                     | 103P402080            | 1/16W 390K-J                     | 103P505060      | R5A24                                 | 103P714070      | R-CARBON - 1/4W 68K-J   |     |
| 1/16W 1.8K-J                                     | 103P502080            | 1/16W 470K-J                     | 103P505070      | R5A25                                 | 103P712010      | R-CARBON - 1/4W 470-J   |     |
| 1/16W 2K-F                                       | 103P493020            | 1/16W 560K-J                     | 103P505080      | R5A26                                 | 103P712090      | R-CARBON - 1/4W 2.2K-J  |     |
| 1/10W 2.2K-J                                     | 103P402090            | 1/16W 680K-J                     | 103P505090      | R5A29                                 | 103P714010      | R-CARBON - 1/4W 22K-J   |     |
| 1/16W 2.2K-F                                     | 103P493030            | 1/16W 820K-J                     | 103P506000      | R5A30                                 | 103C181060      | R-METAL - 2W 180-J      |     |
| 1/16W 2.2K-J                                     | 103P502090            | 1/16W 3.3M-J                     | 103P506070      | R5A31                                 | 103P711030      | R-CARBON - 1/4W 100-J   |     |
|                                                  |                       |                                  |                 | R5A34                                 | 103P711010      | R-CARBON - 1/4W 68-J    |     |
|                                                  |                       |                                  |                 | R5A36                                 | 103C393020      | R-METAL-P - 3W 3.9K-J   |     |
|                                                  |                       |                                  |                 | R5A37                                 | 103C393010      | R-METAL-P - 3W 3.3K-J   | 3&4 |
|                                                  |                       |                                  |                 | R5A37                                 | 103C393020      | R-METAL-P - 3W 3.9K-J   | 125 |

**MODELS: WT-46809 / WS-55809 / WS-55819 / WS-65809 / WS-65819**

[#] Model Legend: (1) WS-55809, (2) WS-55819, (3) WS-65809, (4) WS-65819, (5) WT-46809

| Ref #        | Part #            | Part Name & Description       | [#] | Ref #        | Part #            | Part Name & Description    | [#] |
|--------------|-------------------|-------------------------------|-----|--------------|-------------------|----------------------------|-----|
| R5A38        | 103C397070        | R-METAL-P - 3W 0.56-K         | 1-4 | R5H59        | 103C191070        | R-METAL - 3W 220-J         |     |
| R5A39        | 103C170050        | R-METAL - 1W 22-J             |     | R5H60        | 103C178080        | R-METAL - 1W 4.7-J         |     |
| R5A40        | 103P714090        | R-CARBON - 1/4W 100K-J        |     | R5H84        | 103P713050        | R-CARBON - 1/4W 6.8K-J     |     |
| R5A41        | 103P714040        | R-CARBON - 1/4W 39K-J         |     | R5K09        | 103P762020        | R-FUSE - 1/2W 560-J        |     |
| R5A42        | 103P713030        | R-CARBON - 1/4W 4.7K-J        |     | R5K10        | 103P711010        | R-CARBON - 1/4W 68-J       |     |
| R5A43        | 103P714010        | R-CARBON - 1/4W 22K-J         |     | <b>R5K12</b> | <b>103P760060</b> | <b>R-FUSE - 1/2W 27-J</b>  |     |
| R5A45        | 103C393080        | R-METAL-P - 3W 12K-J          |     | R5K19        | 103P464000        | R-METAL - 1/4W 4.3K-F      |     |
| R5A46        | 103C391050        | R-METAL-P - 3W 150-J          |     | R5K20        | 103P712060        | R-CARBON - 1/4W 1.2K-J     |     |
| R5A47        | 103P714030        | R-CARBON - 1/4W 33K-J         |     | R5K21        | 103P713070        | R-CARBON - 1/4W 10K-J      |     |
| R5A49        | 103P713050        | R-CARBON - 1/4W 6.8K-J        |     | R5K25        | 103P713040        | R-CARBON - 1/4W 5.6K-J     |     |
| R5A50        | 103P712090        | R-CARBON - 1/4W 2.2K-J        |     | R5K31        | 103P711030        | R-CARBON - 1/4W 100-J      |     |
| <b>R5A51</b> | <b>102P107000</b> | <b>R-WIRE - 2W 0.15-K</b>     |     | <b>R5K34</b> | <b>103P760060</b> | <b>R-FUSE - 1/2W 27-J</b>  |     |
| <b>R5A52</b> | <b>103P712010</b> | <b>R-CARBON - 1/4W 470-J</b>  |     | R5K46        | 103P712010        | R-CARBON - 1/4W 470-J      |     |
| <b>R5A53</b> | <b>103P711000</b> | <b>R-CARBON - 1/4W 56-J</b>   |     | <b>R5K50</b> | <b>103P762050</b> | <b>R-FUSE - 1/2W 1K-J</b>  |     |
| R5A54        | 103C190090        | R-METAL - 3W 47-J             |     | R6B00        | 103C392090        | R-METAL-P - 3W 2.2K-J      |     |
| <b>R5A55</b> | <b>103P712050</b> | <b>R-CARBON - 1/4W 1K-J</b>   |     | R6B01        | 103C392090        | R-METAL-P - 3W 2.2K-J      |     |
| <b>R5A56</b> | <b>103P715060</b> | <b>R-CARBON - 1/4W 390K-J</b> |     | R6B02        | 103C392090        | R-METAL-P - 3W 2.2K-J      |     |
| R5A57        | 103P711030        | R-CARBON - 1/4W 100-J         |     | R6B03        | 103C392090        | R-METAL-P - 3W 2.2K-J      |     |
| <b>R5A59</b> | <b>103P461030</b> | <b>R-METAL - 1/4W 330-F</b>   |     | R6B08        | 103P711030        | R-CARBON - 1/4W 100-J      |     |
| <b>R5A60</b> | <b>103P463010</b> | <b>R-METAL - 1/4W 1.8K-F</b>  |     | R6B09        | 103P711030        | R-CARBON - 1/4W 100-J      |     |
| <b>R5A61</b> | <b>103P713060</b> | <b>R-CARBON - 1/4W 8.2K-J</b> |     | <b>R6B13</b> | <b>103P761070</b> | <b>R-FUSE - 1/2W 220-J</b> |     |
| R5A62        | 103P711030        | R-CARBON - 1/4W 100-J         |     | R6B14        | 103P141070        | R-CARBON - 1/2W 220-J      |     |
| R5A63        | 103P713090        | R-CARBON - 1/4W 15K-J         |     | R6B25        | 103P711030        | R-CARBON - 1/4W 100-J      |     |
| <b>R5A64</b> | <b>103P714090</b> | <b>R-CARBON - 1/4W 100K-J</b> |     | R6B26        | 103P713050        | R-CARBON - 1/4W 6.8K-J     |     |
| <b>R5A65</b> | <b>103P141030</b> | <b>R-CARBON - 1/2W 100-J</b>  |     | R6B30        | 103P713070        | R-CARBON - 1/4W 10K-J      |     |
| <b>R5A68</b> | <b>103P463080</b> | <b>R-METAL - 1/4W 2.4K-F</b>  |     | R6G00        | 103C392090        | R-METAL-P - 3W 2.2K-J      |     |
| <b>R5A69</b> | <b>103P460090</b> | <b>R-METAL - 1/4W 220-F</b>   |     | R6G01        | 103C392090        | R-METAL-P - 3W 2.2K-J      |     |
| <b>R5A71</b> | <b>103P713070</b> | <b>R-CARBON - 1/4W 10K-J</b>  |     | R6G02        | 103C392090        | R-METAL-P - 3W 2.2K-J      |     |
| <b>R5A72</b> | <b>103P461070</b> | <b>R-METAL - 1/4W 470-F</b>   |     | R6G03        | 103C392090        | R-METAL-P - 3W 2.2K-J      |     |
| <b>R5A73</b> | <b>103P714080</b> | <b>R-CARBON - 1/4W 82K-J</b>  |     | R6G08        | 103P711030        | R-CARBON - 1/4W 100-J      |     |
| <b>R5A74</b> | <b>103P713070</b> | <b>R-CARBON - 1/4W 10K-J</b>  |     | R6G09        | 103P711030        | R-CARBON - 1/4W 100-J      |     |
| <b>R5A75</b> | <b>103P713070</b> | <b>R-CARBON - 1/4W 10K-J</b>  |     | <b>R6G13</b> | <b>103P761070</b> | <b>R-FUSE - 1/2W 220-J</b> |     |
| <b>R5A76</b> | <b>103P713070</b> | <b>R-CARBON - 1/4W 10K-J</b>  |     | R6G14        | 103P141070        | R-CARBON - 1/2W 220-J      |     |
| <b>R5A78</b> | <b>103P714010</b> | <b>R-CARBON - 1/4W 22K-J</b>  |     | R6G30        | 103P713070        | R-CARBON - 1/4W 10K-J      |     |
| R5A81        | 103P711030        | R-CARBON - 1/4W 100-J         |     | R6R00        | 103C392090        | R-METAL-P - 3W 2.2K-J      |     |
| <b>R5A82</b> | <b>103P370090</b> | <b>R-FUSE - 1/4W 47-J</b>     |     | R6R01        | 103C392090        | R-METAL-P - 3W 2.2K-J      |     |
| <b>R5A83</b> | <b>103P464070</b> | <b>R-METAL - 1/4W 8.2K-F</b>  |     | R6R02        | 103C392090        | R-METAL-P - 3W 2.2K-J      |     |
| <b>R5A84</b> | <b>103P464070</b> | <b>R-METAL - 1/4W 8.2K-F</b>  |     | R6R03        | 103C392090        | R-METAL-P - 3W 2.2K-J      |     |
| R5A85        | 103P711010        | R-CARBON - 1/4W 68-J          |     | R6R08        | 103P711030        | R-CARBON - 1/4W 100-J      |     |
| R5A87        | 103P711030        | R-CARBON - 1/4W 100-J         |     | R6R09        | 103P711030        | R-CARBON - 1/4W 100-J      |     |
| R5A88        | 103P464000        | R-METAL - 1/4W 4.3K-F         |     | <b>R6R13</b> | <b>103P761070</b> | <b>R-FUSE - 1/2W 220-J</b> |     |
| R5A89        | 103P463050        | R-METAL - 1/4W 2.7K-F         |     | R6R14        | 103P141070        | R-CARBON - 1/2W 220-J      |     |
| R5A90        | 103P713030        | R-CARBON - 1/4W 4.7K-J        |     | R6R30        | 103P713070        | R-CARBON - 1/4W 10K-J      |     |
| R5A91        | 103P714090        | R-CARBON - 1/4W 100K-J        |     | R7C99        | 103C178090        | R-METAL - 1W 5.6-J         |     |
| <b>R5A92</b> | <b>103P713070</b> | <b>R-CARBON - 1/4W 10K-J</b>  |     | R7K01        | 103P712050        | R-CARBON - 1/4W 1K-J       |     |
| R5A96        | 103P713070        | R-CARBON - 1/4W 10K-J         |     | R7K02        | 103P713010        | R-CARBON - 1/4W 3.3K-J     |     |
| <b>R5A97</b> | <b>103P711030</b> | <b>R-CARBON - 1/4W 100-J</b>  |     | R7L21        | 103P712050        | R-CARBON - 1/4W 1K-J       |     |
| R5A98        | 103C197090        | R-METAL - 3W 0.82-J           |     | R7L22        | 103P715040        | R-CARBON - 1/4W 270K-J     |     |
| R5A99        | 103P714020        | R-CARBON - 1/4W 27K-J         |     | R7L23        | 103P713070        | R-CARBON - 1/4W 10K-J      |     |
| R5H02        | 103P758000        | R-FUSE - 1/4W 1-J             |     | R7L24        | 103P713070        | R-CARBON - 1/4W 10K-J      |     |
| R5H22        | 103P711030        | R-CARBON - 1/4W 100-J         |     | R7L25        | 103P712080        | R-CARBON - 1/4W 1.8K-J     |     |
| R5H40        | 103P712040        | R-CARBON - 1/4W 820-J         |     | R7L26        | 103P462090        | R-METAL - 1/4W 1.5K-F      |     |
| R5H41        | 103P712090        | R-CARBON - 1/4W 2.2K-J        |     | R7L29        | 103P464030        | R-METAL - 1/4W 5.6K-F      |     |
| R5H42        | 103P711050        | R-CARBON - 1/4W 150-J         |     | R7L32        | 103P466070        | R-METAL - 1/4W 56K-F       |     |
| R5H47        | 103C172010        | R-METAL - 1W 470-J            |     | R8C03        | 103P711090        | R-CARBON - 1/4W 330-J      |     |
| R5H48        | 103P712060        | R-CARBON - 1/4W 1.2K-J        |     | R8C07        | 103C391050        | R-METAL-P - 3W 150-J       |     |
| R5H49        | 103P714070        | R-CARBON - 1/4W 68K-J         |     | R8C11        | 103P711090        | R-CARBON - 1/4W 330-J      |     |
| R5H50        | 103P714070        | R-CARBON - 1/4W 68K-J         |     | R8C15        | 103C391050        | R-METAL-P - 3W 150-J       |     |
| R5H51        | 103P712060        | R-CARBON - 1/4W 1.2K-J        |     | R8C19        | 103P711090        | R-CARBON - 1/4W 330-J      |     |
| R5H53        | 103P713080        | R-CARBON - 1/4W 12K-J         |     | R8C23        | 103C391050        | R-METAL-P - 3W 150-J       |     |

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**[#] Model Legend: (1) WS-55809, (2) WS-55819, (3) WS-65809, (4) WS-65819, (5) WT-46809**

| Ref #        | Part #            | Part Name & Description          | [#] |
|--------------|-------------------|----------------------------------|-----|
| R8C27        | 103P711090        | R-CARBON - 1/4W 330-J            |     |
| R8C31        | 103C391050        | R-METAL-P - 3W 150-J             |     |
| R8C35        | 103P711090        | R-CARBON - 1/4W 330-J            |     |
| R8C39        | 103C391050        | R-METAL-P - 3W 150-J             |     |
| R8C43        | 103P711090        | R-CARBON - 1/4W 330-J            |     |
| R8C47        | 103C391050        | R-METAL-P - 3W 150-J             |     |
| R8C60        | 103C191090        | R-METAL - 3W 330-J               |     |
| R8C61        | 103C191090        | R-METAL - 3W 330-J               |     |
| R8C62        | 103P712090        | R-CARBON - 1/4W 2.2K-J           |     |
| R8C63        | 103P712090        | R-CARBON - 1/4W 2.2K-J           |     |
| R8C64        | 103P712090        | R-CARBON - 1/4W 2.2K-J           |     |
| R8C65        | 103P712090        | R-CARBON - 1/4W 2.2K-J           |     |
| R8C66        | 103P712090        | R-CARBON - 1/4W 2.2K-J           |     |
| R8C67        | 103P712090        | R-CARBON - 1/4W 2.2K-J           |     |
| R8C68        | 103P712090        | R-CARBON - 1/4W 2.2K-J           |     |
| R9A02        | 102P080010        | R-CEMENT-WIRE - 5W 2.2-K         |     |
| <b>R9A03</b> | <b>109C010010</b> | <b>R-COMPOSITION - 1/2W 1M-K</b> |     |
| <b>R9A05</b> | <b>109C010010</b> | <b>R-COMPOSITION - 1/2W 1M-K</b> |     |
| <b>R9A06</b> | <b>109C010010</b> | <b>R-COMPOSITION - 1/2W 1M-K</b> |     |
| R9A20        | 103P713010        | R-CARBON - 1/4W 3.3K-J           |     |
| R9A21        | 103C394040        | R-METAL-P - 3W 39K-J             |     |
| R9A22        | 103C183070        | R-METAL - 2W 10K-J               |     |
| R9A24        | 103P713040        | R-CARBON - 1/4W 5.6K-J           |     |
| R9A25        | 103P713010        | R-CARBON - 1/4W 3.3K-J           |     |
| R9A26        | 103P712030        | R-CARBON - 1/4W 680-J            |     |
| R9A27        | 103C187050        | R-METAL - 2W 0.39-J              |     |
| R9A28        | 103P712090        | R-CARBON - 1/4W 2.2K-J           |     |
| R9A30        | 103P712090        | R-CARBON - 1/4W 2.2K-J           |     |
| R9A31        | 103P713020        | R-CARBON - 1/4W 3.9K-J           |     |
| R9A32        | 103P714010        | R-CARBON - 1/4W 22K-J            |     |
| R9A34        | 103P712090        | R-CARBON - 1/4W 2.2K-J           |     |
| R9A35        | 103P713050        | R-CARBON - 1/4W 6.8K-J           |     |
| R9A36        | 103P714090        | R-CARBON - 1/4W 100K-J           |     |
| R9A37        | 103P712070        | R-CARBON - 1/4W 1.5K-J           |     |
| R9A38        | 103P714090        | R-CARBON - 1/4W 100K-J           |     |
| R9A39        | 103P714010        | R-CARBON - 1/4W 22K-J            |     |
| R9A40        | 103P712010        | R-CARBON - 1/4W 470-J            |     |
| R9A41        | 103P712050        | R-CARBON - 1/4W 1K-J             |     |
| R9A42        | 103P464050        | R-METAL - 1/4W 6.8K-F            |     |
| R9A43        | 103P466070        | R-METAL - 1/4W 56K-F             |     |
| R9A44        | 103P464010        | R-METAL - 1/4W 4.7K-F            |     |
| R9A50        | 103P713010        | R-CARBON - 1/4W 3.3K-J           |     |
| R9A51        | 103P715050        | R-CARBON - 1/4W 330K-J           |     |
| R9A53        | 103P712030        | R-CARBON - 1/4W 680-J            |     |
| R9A54        | 102P107000        | R-WIRE - 2W 0.15-K               |     |
| R9A55        | 102P106090        | R-WIRE - 2W 0.12-K               |     |
| R9A56        | 103P713010        | R-CARBON - 1/4W 3.3K-J           |     |
| R9A57        | 103P713010        | R-CARBON - 1/4W 3.3K-J           |     |
| R9A60        | 103P714050        | R-CARBON - 1/4W 47K-J            |     |
| R9A61        | 103P713040        | R-CARBON - 1/4W 5.6K-J           |     |
| R9A62        | 103P713070        | R-CARBON - 1/4W 10K-J            |     |
| R9A63        | 103P712090        | R-CARBON - 1/4W 2.2K-J           |     |
| R9A66        | 103P712090        | R-CARBON - 1/4W 2.2K-J           |     |
| R9A68        | 103C180050        | R-METAL - 2W 22-J                |     |
| R9A69        | 103C180050        | R-METAL - 2W 22-J                |     |
| R9A75        | 103P714090        | R-CARBON - 1/4W 100K-J           |     |
| R9A77        | 103P714090        | R-CARBON - 1/4W 100K-J           |     |
| R9A78        | 103P711030        | R-CARBON - 1/4W 100-J            |     |
| R9A79        | 103P711030        | R-CARBON - 1/4W 100-J            |     |
| R9A80        | 103C193060        | R-METAL - 3W 8.2K-J              |     |

| Ref #        | Part #            | Part Name & Description            | [#] |
|--------------|-------------------|------------------------------------|-----|
| R9A83        | 103P463090        | R-METAL - 1/4W 3.9K-F              |     |
| R9C01        | 103C177020        | R-METAL - 1W 0.22-J                |     |
| R9C10        | 103C170020        | R-METAL - 1W 12-J                  |     |
| <b>R9D00</b> | <b>109D036020</b> | <b>R-COMPOSITION - 1/2W 4.7M-K</b> |     |

**CAPACITORS AND TRIMMERS**

**CHIP Type Capacitors (by Value)**

| Value       | Part No.   | Value            | Part No.   |
|-------------|------------|------------------|------------|
| 50V 10P-C   | 154P341010 | 50V 8200P-K      | 141P142000 |
| 50V 15P-J   | 154P341050 | 50V 0.01M-K      | 141P142010 |
| 50V 22P-J   | 154P341090 | 50V 0.01M-Z      | 141P143080 |
| 50V 33P-J   | 154P342030 | 50V 0.012M-K     | 141P142020 |
| 50V 47P-J   | 154P342070 | 50V 0.015M-K     | 141P142030 |
| 50V 56P-J   | 154P353000 | 25V 0.033M-K     | 141P142070 |
| 50V 82P-J   | 154P343030 | 25V 0.047M-K     | 141P142090 |
| 50V 100P-J  | 154P343050 | 25V 0.068M-K     | 141P143010 |
| 50V 100P-J  | 154P353060 | 16V 0.1M-K       | 141P143030 |
| 50V 120P-J  | 154P343070 | 25V 0.1M-K       | 141P139030 |
| 50V 120P-J  | 154P353080 | 25V 0.1M-Z       | 141P144020 |
| 50V 150P-J  | 154P354000 | 50V 0.1M-K       | 141P138020 |
| 50V 220P-J  | 154P354040 | 25V 0.15M-K      | 141P139050 |
| 50V 270P-J  | 154P344050 | 16V 0.22M-K      | 141P139070 |
| 50V 330P-J  | 154P344070 | 16V 0.47M-K      | 141P139090 |
| 50V 470P-J  | 154P355020 | 16V 0.47M-Z      | 141P144050 |
| 50V 470P-J  | 154P345010 | 16V 1M-K         | 141P134070 |
| 50V 560P-J  | 154P355040 | 16V 1M-Z         | 141P144060 |
| 50V 1000P-J | 154P336090 | 50V 1M-M 105C    | 181P526010 |
| 50V 2200P-K | 141P131030 | 50V 2.2M-M 105C  | 181P526020 |
| 50V 2200P-Z | 141P143060 | 6.3V 22M-M 105C  | 181P520010 |
| 50V 2700P-J | 154P337040 | 6.3V 47M-M 105C  | 181P520030 |
| 50V 3900P-J | 154P329010 | 16V 47M-M 105C   | 181P522060 |
| 50V 4700P-K | 141P141070 | 6.3V 100M-M 105C | 181P520040 |
| 50V 5600P-J | 154P329030 |                  |            |

**Conventional Capacitors (by Ref #)**

| Ref # | Part #     | Description             |
|-------|------------|-------------------------|
| C1A23 | 172P262010 | C-M-POLY - 50V 0.047M-J |
| C1A29 | 181P352040 | C-ELEC - 16V 100M-M     |
| C1A30 | 181P352040 | C-ELEC - 16V 100M-M     |
| C1B29 | 181P352040 | C-ELEC - 16V 100M-M     |
| C2C21 | 181P352030 | C-ELEC - 16V 47M-M      |
| C2D19 | 181P352030 | C-ELEC - 16V 47M-M      |
| C2D31 | 181P352030 | C-ELEC - 16V 47M-M      |
| C2J66 | 181P352060 | C-ELEC - 16V 330M-M     |
| C2K43 | 181P352070 | C-ELEC - 16V 470M-M     |
| C2L41 | 181P352070 | C-ELEC - 16V 470M-M     |
| C2V07 | 181P352050 | C-ELEC - 16V 220M-M     |
| C2V72 | 181P352050 | C-ELEC - 16V 220M-M     |
| C2W02 | 181P352080 | C-ELEC - 16V 1000M-M    |
| C2W04 | 181P352050 | C-ELEC - 16V 220M-M     |
| C2W05 | 181P352030 | C-ELEC - 16V 47M-M      |
| C2W09 | 181P352030 | C-ELEC - 16V 47M-M      |
| C2W14 | 181P352030 | C-ELEC - 16V 47M-M      |
| C2W76 | 181P352030 | C-ELEC - 16V 47M-M      |
| C2X02 | 181P352030 | C-ELEC - 16V 47M-M      |
| C2X29 | 181P352040 | C-ELEC - 16V 100M-M     |
| C2X43 | 181P124040 | C-ELEC-NP - 50V 10M-M   |
| C2X45 | 181P352030 | C-ELEC - 16V 47M-M      |
| C2X47 | 181P124040 | C-ELEC-NP - 50V 10M-M   |
| C2X50 | 181P124040 | C-ELEC-NP - 50V 10M-M   |

**MODELS: WT-46809 / WS-55809 / WS-55819 / WS-65809 / WS-65819**

**[#] Model Legend: (1) WS-55809, (2) WS-55819, (3) WS-65809, (4) WS-65819, (5) WT-46809**

| Ref #        | Part #            | Part Name & Description           | [#] | Ref #        | Part #            | Part Name & Description          | [#] |
|--------------|-------------------|-----------------------------------|-----|--------------|-------------------|----------------------------------|-----|
| C2Y01        | 181P352030        | C-ELEC - 16V 47M-M                |     | C6B04        | 181P352030        | C-ELEC - 16V 47M-M               |     |
| C2Y15        | 181P352030        | C-ELEC - 16V 47M-M                |     | C6B23        | 181P352030        | C-ELEC - 16V 47M-M               |     |
| C2Y21        | 181P124040        | C-ELEC-NP - 50V 10M-M             |     | C6G02        | 181P195040        | C-ELEC - 350V 4.7M-M/Q           |     |
| C2Y23        | 181P352030        | C-ELEC - 16V 47M-M                |     | C6G04        | 181P352030        | C-ELEC - 16V 47M-M               |     |
| C2Y25        | 181P124040        | C-ELEC-NP - 50V 10M-M             |     | C6G23        | 181P352030        | C-ELEC - 16V 47M-M               |     |
| C2Y28        | 181P124040        | C-ELEC-NP - 50V 10M-M             |     | C6M03        | 181P352030        | C-ELEC - 16V 47M-M               |     |
| C2Y31        | 181P124040        | C-ELEC-NP - 50V 10M-M             |     | C6M24        | 181P352030        | C-ELEC - 16V 47M-M               |     |
| C2Y35        | 181P124040        | C-ELEC-NP - 50V 10M-M             |     | C6M48        | 181P352040        | C-ELEC - 16V 100M-M              |     |
| C2Y38        | 181P124040        | C-ELEC-NP - 50V 10M-M             |     | C6P03        | 181P352030        | C-ELEC - 16V 47M-M               |     |
| C2Y41        | 181P352030        | C-ELEC - 16V 47M-M                |     | C6P24        | 181P352030        | C-ELEC - 16V 47M-M               |     |
| C2Y44        | 181P352030        | C-ELEC - 16V 47M-M                |     | C6R02        | 181P195040        | C-ELEC - 350V 4.7M-M/Q           |     |
| C3A11        | 181P352040        | C-ELEC - 16V 100M-M               |     | C6R04        | 181P352030        | C-ELEC - 16V 47M-M               |     |
| C3A15        | 181P124020        | C-ELEC-NP - 50V 4.7M-M            |     | C6R23        | 181P352030        | C-ELEC - 16V 47M-M               |     |
| C3A27        | 181P352060        | C-ELEC - 16V 330M-M               |     | C7B41        | 181P352030        | C-ELEC - 16V 47M-M               |     |
| C3A30        | 181P352040        | C-ELEC - 16V 100M-M               |     | C7B77        | 181P352030        | C-ELEC - 16V 47M-M               |     |
| C3A38        | 181P124020        | C-ELEC-NP - 50V 4.7M-M            |     | C7C02        | 181P352030        | C-ELEC - 16V 47M-M               |     |
| C3E09        | 172P262050        | C-M-POLY - 50V 0.1M-J             |     | C7C12        | 181P352030        | C-ELEC - 16V 47M-M               |     |
| C3E11        | 172P262050        | C-M-POLY - 50V 0.1M-J             |     | C7C14        | 181P352030        | C-ELEC - 16V 47M-M               |     |
| C3E12        | 172P262050        | C-M-POLY - 50V 0.1M-J             |     | C7C18        | 181P352030        | C-ELEC - 16V 47M-M               |     |
| C3E14        | 172P262050        | C-M-POLY - 50V 0.1M-J             |     | C7C26        | 181P352030        | C-ELEC - 16V 47M-M               |     |
| C4A04        | 172P262050        | C-M-POLY - 50V 0.1M-J             |     | C7C29        | 181P352040        | C-ELEC - 16V 100M-M              |     |
| C4A05        | 172P262050        | C-M-POLY - 50V 0.1M-J             |     | C7C30        | 181P350010        | C-ELEC - 16V 4700M-M             |     |
| C4A10        | 181P352030        | C-ELEC - 16V 47M-M                |     | C7C40        | 181P352030        | C-ELEC - 16V 47M-M               |     |
| C4A14        | 181P352030        | C-ELEC - 16V 47M-M                |     | C7C91        | 181P352030        | C-ELEC - 16V 47M-M               |     |
| C4A34        | 181P352030        | C-ELEC - 16V 47M-M                |     | C7C94        | 181P352030        | C-ELEC - 16V 47M-M               |     |
| C4A35        | 172P262090        | C-M-POLY - 50V 0.22M-J            |     | C7K01        | 181P352030        | C-ELEC - 16V 47M-M               |     |
| C4B01        | 172P262000        | C-M-POLY - 50V 0.039M-J           | 1-4 | C7L22        | 172P262050        | C-M-POLY - 50V 0.1M-J            |     |
| C4B02        | 181P358000        | C-ELEC - 35V 1000M-M              |     | C8A06        | 181P352030        | C-ELEC - 16V 47M-M               |     |
| C4B13        | 172P262020        | C-M-POLY - 50V 0.056M-J           |     | C8A39        | 181P352030        | C-ELEC - 16V 47M-M               |     |
| C5A03        | 142P020050        | C-CER - B50V 470P-K               |     | C8A43        | 172P262050        | C-M-POLY - 50V 0.1M-J            |     |
| C5A13        | 181P352040        | C-ELEC - 16V 100M-M               |     | C8A46        | 181P352030        | C-ELEC - 16V 47M-M               |     |
| C5A21        | 172P262050        | C-M-POLY - 50V 0.1M-J             |     | C8A48        | 181P352030        | C-ELEC - 16V 47M-M               |     |
| C5A31        | 172P580050        | C-M-PLA-PP - 1800V 1500P-J        | 3&4 | C8C03        | 181P358000        | C-ELEC - 35V 1000M-M             |     |
| C5A32        | 172P581030        | C-M-PLA-PP - 1800V 3300P-J        | 3&4 | C8C05        | 181P358000        | C-ELEC - 35V 1000M-M             |     |
| C5A32        | 172P581040        | C-M-PLA-PP - 1800V 3600P-J        | 125 | C8C18        | 181P358000        | C-ELEC - 35V 1000M-M             |     |
| C5A33        | 172P581030        | C-M-PLA-PP - 1800V 3300P-J        | 3&4 | C8C20        | 181P358000        | C-ELEC - 35V 1000M-M             |     |
| C5A33        | 172P581040        | C-M-PLA-PP - 1800V 3600P-J        | 125 | C8C43        | 142P020080        | C-CER - B50V 820P-K              |     |
| C5A34        | 154P262000        | C-CER - R2KV 220P-K               | 3&4 | C8C44        | 142P020080        | C-CER - B50V 820P-K              |     |
| C5A34        | 154P262040        | C-CER - R2KV 470P-K               | 125 | C8C45        | 142P020080        | C-CER - B50V 820P-K              |     |
| C5A35        | 142P011070        | C-CER - B500V 2200P-K             | 3&4 | C8C46        | 142P020080        | C-CER - B50V 820P-K              |     |
| C5A39        | 142P011000        | C-CER - B500V 560P-K              |     | C8C47        | 142P020080        | C-CER - B50V 820P-K              |     |
| C5A40        | 142P011000        | C-CER - B500V 560P-K              |     | C8C48        | 142P020080        | C-CER - B50V 820P-K              |     |
| C5A42        | 181P352030        | C-ELEC - 16V 47M-M                |     | C8D25        | 181P352030        | C-ELEC - 16V 47M-M               |     |
| <b>C5A51</b> | <b>154P260010</b> | <b>C-CER - R1KV 220P-K</b>        |     | C8D32        | 181P352030        | C-ELEC - 16V 47M-M               |     |
| <b>C5A52</b> | <b>172P460010</b> | <b>C-M-PLA-PP - 2000V 1000P-J</b> |     | C8D34        | 181P352030        | C-ELEC - 16V 47M-M               |     |
| <b>C5A53</b> | <b>172P460030</b> | <b>C-M-PLA-PP - 2000V 1200P-J</b> |     | <b>C9A05</b> | <b>189P185070</b> | <b>C-CER - 250VAC 1000P-M</b>    |     |
| C5A54        | 185D120010        | C-ELEC - H160V 330M-M 105C        |     | <b>C9A06</b> | <b>189P185070</b> | <b>C-CER - 250VAC 1000P-M</b>    |     |
| C5A55        | 172P088060        | C-PLAST-PP - 630V 6800P-J         |     | <b>C9A07</b> | <b>189P153040</b> | <b>C-M-POLY - 250VAC 0.1M-M</b>  |     |
| <b>C5A60</b> | <b>172P262050</b> | <b>C-M-POLY - 50V 0.1M-J</b>      |     | <b>C9A08</b> | <b>189P185090</b> | <b>C-CER - 250VAC 2200P-M</b>    |     |
| <b>C5A64</b> | <b>181P352010</b> | <b>C-ELEC - 16V 22M-M</b>         |     | <b>C9A09</b> | <b>189P185090</b> | <b>C-CER - 250VAC 2200P-M</b>    |     |
| <b>C5A70</b> | <b>172P384030</b> | <b>C-M-POLY - 100V 3.3M-K</b>     |     | <b>C9A10</b> | <b>189P185090</b> | <b>C-CER - 250VAC 2200P-M</b>    |     |
| <b>C5A71</b> | <b>172P262060</b> | <b>C-M-POLY - 50V 0.12M-J</b>     |     | <b>C9A11</b> | <b>189P185090</b> | <b>C-CER - 250VAC 2200P-M</b>    |     |
| C5H16        | 172P186030        | C-PLAST-PP - 200V 0.01M-K         |     | C9A12        | 185D122050        | C-ELEC - H200V 1000M-M 105C      |     |
| C5H20        | 181P352040        | C-ELEC - 16V 100M-M               |     | <b>C9A13</b> | <b>189P152070</b> | <b>C-M-POLY - 250VAC 0.01M-M</b> |     |
| C5H22        | 155P112090        | C-CER - 500V 56P-J                |     | <b>C9A14</b> | <b>189P152070</b> | <b>C-M-POLY - 250VAC 0.01M-M</b> |     |
| C5H24        | 181P192060        | C-ELEC - 200V 22M-M               |     | C9A20        | 189P152070        | C-M-POLY - 250VAC 0.01M-M        |     |
| C5K03        | 181P352040        | C-ELEC - 16V 100M-M               |     | C9A24        | 142P020050        | C-CER - B50V 470P-K              |     |
| C5K12        | 181P352040        | C-ELEC - 16V 100M-M               |     | C9A33        | 181P352070        | C-ELEC - 16V 470M-M              |     |
| C5K14        | 181P352030        | C-ELEC - 16V 47M-M                |     | C9A35        | 181P352040        | C-ELEC - 16V 100M-M              |     |
| C6B02        | 181P195040        | C-ELEC - 350V 4.7M-M/Q            |     | C9A40        | 181P352080        | C-ELEC - 16V 1000M-M             |     |

**MODELS: WT-46809 / WS-55809 / WS-55819 / WS-65809 / WS-65819**

[#] Model Legend: (1) WS-55809, (2) WS-55819, (3) WS-65809, (4) WS-65819, (5) WT-46809

| Ref #                | Part #                              | Part Name & Description         | [#]            | Ref #                        | Part #            | Part Name & Description                  | [#] |
|----------------------|-------------------------------------|---------------------------------|----------------|------------------------------|-------------------|------------------------------------------|-----|
| C9A42                | 181P352040                          | C-ELEC - 16V 100M-M             |                |                              | 642C352010        | CLIP-MIRROR                              | 1&2 |
| <b>C9A50</b>         | <b>142P020050</b>                   | <b>C-CER - B50V 470P-K</b>      |                |                              | 669D514070        | SCREW-MIRROR BOARD                       | 3&4 |
| C9A53                | 185D122050                          | C-ELEC - H200V 1000M-M 105C     |                |                              | 750A356010        | COVER-BACK - 46"                         | 5   |
| C9A54                | 154P260080                          | C-CER - R1KV 3300P-K            |                |                              | 762B345020        | BACK-BOARD                               | 5   |
| C9A55                | 142P020070                          | C-CER - B50V 680P-K             |                |                              | 762B354010        | BACK BOARD                               | 3&4 |
| C9A58                | 185D163020                          | C-ELEC - H50V 4700M-M 105C      |                |                              | 762B354020        | BACK BOARD                               | 1&2 |
| C9A62                | 181P195080                          | C-ELEC - 350V 47M-M/Q           |                |                              | 767D048090        | MIRROR - 65"                             | 3&4 |
| C9A63                | 185D121020                          | C-ELEC - H180V 470M-M 105C      |                |                              | 767D055040        | MIRROR - 55"                             | 1&2 |
| C9A69                | 181P358030                          | C-ELEC - 35V 4700M-M            |                |                              | 767D055070        | MIRROR - 46"                             | 5   |
| C9A73                | 181P358030                          | C-ELEC - 35V 4700M-M            |                |                              | <b>920P016010</b> | <b>HV-BLOCK - MSC102</b>                 |     |
| C9C01                | 181P352030                          | C-ELEC - 16V 47M-M              |                | AG5K00                       | 224D019040        | AIR-GAP - 2.0+-0.5KV S.LEAD              |     |
| C9C02                | 181P352030                          | C-ELEC - 16V 47M-M              |                | CF6M01                       | 299P128010        | CERAMIC-OSC - CSB500F2                   |     |
| C9C04                | 181P352030                          | C-ELEC - 16V 47M-M              |                | CF6P01                       | 299P128010        | CERAMIC-OSC - CSB500F2                   |     |
| C9C05                | 181P352030                          | C-ELEC - 16V 47M-M              |                | <b>F5A00</b>                 | <b>283P043060</b> | <b>FUSE - LF251 3A</b>                   |     |
| C9C10                | 181P352030                          | C-ELEC - 16V 47M-M              |                | <b>F5A01</b>                 | <b>283P043060</b> | <b>FUSE - LF251 3A</b>                   |     |
| C9C20                | 181P352030                          | C-ELEC - 16V 47M-M              |                | <b>F9A01</b>                 | <b>283P044010</b> | <b>FUSE - LF251 7A</b>                   |     |
| <b>C9D00</b>         | <b>189P153040</b>                   | <b>C-M-POLY - 250VAC 0.1M-M</b> |                | <b>F9A02</b>                 | <b>283P044020</b> | <b>FUSE - LF251 10A</b>                  |     |
| <b>C9D01</b>         | <b>189P153040</b>                   | <b>C-M-POLY - 250VAC 0.1M-M</b> |                | <b>F9A03</b>                 | <b>283P043090</b> | <b>FUSE - LF251 5A</b>                   |     |
| <b>SWITCHES</b>      |                                     |                                 |                | <b>F9A04</b>                 | <b>283P043090</b> | <b>FUSE - LF251 5A</b>                   |     |
| S7L21                | 432P089010                          | SW-KEY-BOARD - PUSH-ON          |                | <b>F9A05</b>                 | <b>283P043090</b> | <b>FUSE - LF251 5A</b>                   |     |
| S7L22                | 432P089010                          | SW-KEY-BOARD - PUSH-ON          |                | <b>F9A06</b>                 | <b>283P044010</b> | <b>FUSE - LF251 7A</b>                   |     |
| S7L23                | 432P089010                          | SW-KEY-BOARD - PUSH-ON          |                | <b>F9D00</b>                 | <b>283D131040</b> | <b>FUSE - S10A 125A</b>                  |     |
| S7L24                | 432P089010                          | SW-KEY-BOARD - PUSH-ON          |                | <b>K9A50</b>                 | <b>287P049080</b> | <b>RELAY-POWER - DG12D1-0(M)</b>         |     |
| S7L25                | 432P089010                          | SW-KEY-BOARD - PUSH-ON          |                | <b>PC9A20</b>                | <b>268P058020</b> | <b>PHOTO-COUPLER - ON3131-R/ON3161-R</b> |     |
| S7L26                | 432P089010                          | SW-KEY-BOARD - PUSH-ON          |                | <b>PC9A50</b>                | <b>268P058020</b> | <b>PHOTO-COUPLER - ON3131-R/ON3161-R</b> |     |
| S7L27                | 432P089010                          | SW-KEY-BOARD - PUSH-ON          |                | PC9A51                       | 268P058020        | PHOTO-COUPLER - ON3131-R/ON3161-R        |     |
| S7L28                | 432P089010                          | SW-KEY-BOARD - PUSH-ON          |                | PJ2J01                       | 440C386010        | PIN-JACK-BOARD                           |     |
| S7L29                | 432P089010                          | SW-KEY-BOARD - PUSH-ON          |                | PJ2J02                       | 440C386020        | PIN-JACK-BOARD-6P-1S                     |     |
| <b>MISCELLANEOUS</b> |                                     |                                 |                | PJ2J07                       | 440C385010        | PIN-JACK-BOARD-6P                        |     |
| 246C351030           | AC-POWER-CORD                       |                                 |                | PJ2J08                       | 440C261070        | PIN-JACK-BOARD-2P                        |     |
| 305P702020           | RF-SW - YAA41-0126G                 |                                 |                | PJ2J09                       | 440C261050        | PIN-JACK-BOARD-2P                        |     |
| <b>330P276010</b>    | <b>DEFL-YOKE</b>                    |                                 | <b>3&amp;4</b> | PJ2J10                       | 440C385020        | PIN-JACK-BOARD-6P                        |     |
| <b>330P276020</b>    | <b>DEFL-YOKE</b>                    |                                 | <b>125</b>     | PJ2J11                       | 440C231010        | JACK-3PIN - FRONT A/V INPUT              |     |
| 338P046030           | SVM COIL:G&B                        |                                 |                | PJ2J12                       | 440C261050        | PIN-JACK-BOARD-2P                        |     |
| 338P046080           | SVM COIL:RED                        |                                 | 135            | PJ7A00                       | 451C129010        | JACK-MINI - AV NET/IR BLAST              |     |
| 338P051010           | SVM COIL:GREEN                      |                                 | 2&4            | PJ7A02                       | 451C129010        | JACK-MINI - AV NET/IR BLAST              |     |
| 338P051020           | SVM COIL:RED                        |                                 | 2&4            | PT7A00                       | 264P723010        | D-LED - SFH310-3                         |     |
| 411D033010           | CORE-FERRITE                        |                                 |                | <b>TU1A01</b>                | <b>295P500010</b> | <b>TUNER-RF - ENG26515G</b>              |     |
| 411D044010           | CORE-FERRITE                        |                                 |                | <b>TU1B01</b>                | <b>295P500010</b> | <b>TUNER-RF - ENG26515G</b>              |     |
| <b>449C141030</b>    | <b>SOCKET-CRT</b>                   |                                 |                | X2031                        | 285P374050        | QUARTS-CRYST - 20.000MHZ                 |     |
| <b>453B035010</b>    | <b>CAP-ANODE - SHORT - RED</b>      |                                 |                | X3A01                        | 299P208010        | CERAMIC-OSC - C5B503F58                  |     |
| <b>453B035020</b>    | <b>CAP-ANODE - LONG - G&amp;B</b>   |                                 |                | X6C26                        | 285P374020        | QUARTZ-CRYST - 3.579545MHZ               |     |
| <b>453C021030</b>    | <b>LEAD-ANODE - FBT-HV</b>          |                                 |                | X6P26                        | 285P374020        | QUARTZ-CRYST - 3.579545MHZ               |     |
| 480P053010           | SPEAKER                             |                                 | 135            | X7A01                        | 285P029030        | QUARTZ-CRYST - 4.000000MHZ               |     |
| 480P063010           | SPEAKER                             |                                 | 2&4            | X7H00                        | 285P335040        | QUARTZ-CRYST - 60.000MHZ                 |     |
| 490P154010           | LENS - RED/BLUE                     |                                 | 5              | X7H01                        | 285P335050        | QUARTZ-CRYST - 80.000MHZ                 |     |
| 490P154020           | LENS - GREEN                        |                                 | 5              | Z7K01                        | 939P617010        | UNIT-PREAMP - GP1U283Q                   |     |
| 490P174070           | LENS - RED                          |                                 | 3&4            | <b>PRINTED CIRCUIT BOARD</b> |                   |                                          |     |
| 490P174080           | LENS - GREEN                        |                                 | 3&4            | 930B866005                   | ASSY-PWB-MAIN     |                                          | 5   |
| 490P174090           | LENS - BLUE                         |                                 | 3&4            | 930B866006                   | ASSY-PWB-MAIN     |                                          | 1&2 |
| 490P220010           | LENS - ALL COLORS                   |                                 | 1&2            | 930B866007                   | ASSY-PWB-MAIN     |                                          | 3&4 |
| 589C062010           | CASTER                              |                                 | 1-4            | 930B867003                   | ASSY-PWB-POWER    |                                          |     |
| 597D843010           | STIFFENER-MIRROR - 3/4"X3/4" TUBING |                                 | 3&4            | 930B881001                   | ASSY-PWB-SIGNAL   |                                          |     |
| 622B009010           | TRAY, COOLANT - PS 94V-0            |                                 |                | 935C907003                   | ASSY-PWB-CRT      |                                          |     |
| 622C065010           | CLIP-MIRROR                         |                                 | 5              | 935C957001                   | ASSY-PWB-TERMINAL |                                          |     |
| 622C076010           | BRACKET-SVM                         |                                 |                | 935C966001                   | ASSY-PWB-2HDW     |                                          |     |
| 642C340010           | BOARD-MIRROR                        |                                 | 3&4            | 935D519003                   | ASSY-PWB-PREAMP   |                                          |     |

**MODELS: WT-46809 / WS-55809 / WS-55819 / WS-65809 / WS-65819**

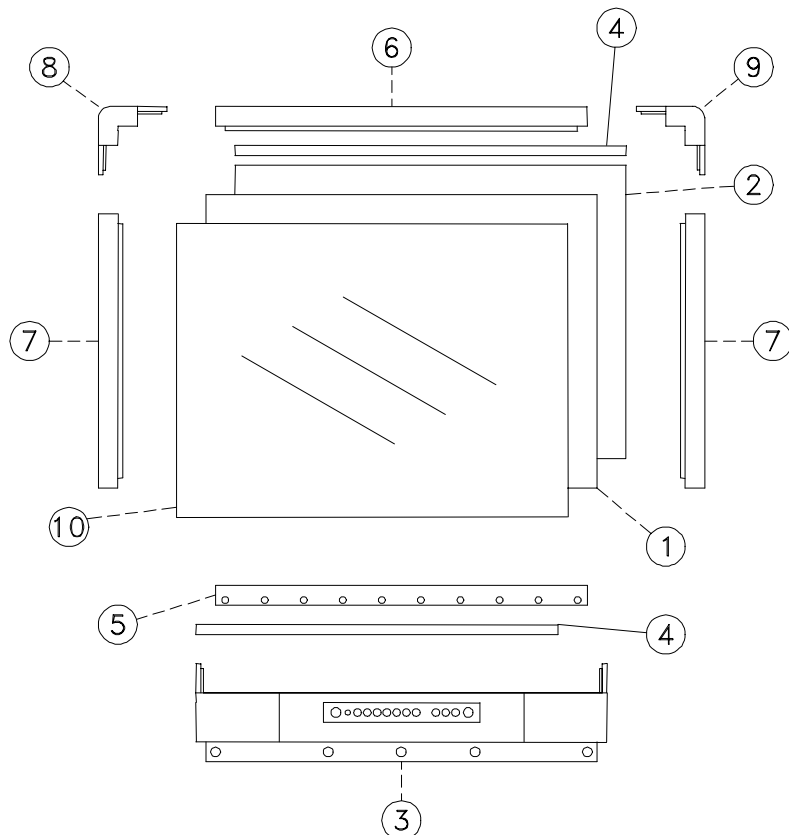
**[#] Model Legend: (1) WS-55809, (2) WS-55819, (3) WS-65809, (4) WS-65819, (5) WT-46809**

| Ref # | Part #     | Part Name & Description   | [#] | Ref # | Part #      | Part Name & Description | [#] |
|-------|------------|---------------------------|-----|-------|-------------|-------------------------|-----|
|       | 935D520003 | ASSY-PWB-SVM              |     |       | 761A159040  | GRILLE-SP - 55"         | 1   |
|       | 935D521004 | ASSY-PWB-DBF              |     |       | 761A171010  | GRILLE-SP - 65"         | 3   |
|       | 935D524002 | ASSY-PWB-CONTROL 2        |     |       | 761A172020  | GRILLE-SP               | 2   |
|       | 935D525003 | ASSY-PWB-FRONT            |     |       | 761A173020  | GRILLE-SP               | 4   |
|       | 935D600001 | ASSY-PWB-JUNGLE           |     |       | 761A185010  | GRILLE-SP               | 5   |
|       | 935D601001 | ASSY-PWB-CONV-GENE        |     |       |             |                         |     |
|       | 935D602001 | ASSY-PWB-3DYC/MD          |     |       |             |                         |     |
|       |            | <b>COSMETIC PARTS</b>     |     |       |             | <b>ACCESSORIES</b>      |     |
|       | 702A391020 | PANEL-CONTROL             | 1   |       | 290P103010  | REMOTE CONTROL          |     |
|       | 702A392010 | PANEL-TERMINAL            |     |       | I/B WT46809 | IB - OWNERS GUIDE       |     |
|       | 702A393020 | PANEL-CONTROL             | 3   |       |             |                         |     |
|       | 702A397010 | PANEL-CONTROL             | 5   |       |             |                         |     |
|       | 702A398010 | PANEL-CONTROL             | 2&4 |       |             |                         |     |
|       | 703B031020 | DOOR - FRONT A/V IN COVER | 1&3 |       |             |                         |     |
|       | 703B032010 | DOOR                      | 5   |       |             |                         |     |

[#] Model Legend: (1) WS-55809, (2) WS-55819, (3) WS-65809, (4) WS-65819, (5) WT-46809

| Ref #                        | Part #     | Part Name & Description |
|------------------------------|------------|-------------------------|
| <b>SCREEN ASSEMBLY PARTS</b> |            |                         |
| <b>WT-46809 (Figure 1)</b>   |            |                         |
| (1)                          | 491P118020 | SCREEN-LENTICULAR       |
| (2)                          | 491P119020 | LENS-FRESNEL            |
| (3)                          | 702A397010 | PANEL-CONTROL           |
| (4)                          | 622C071030 | CLIP, DIAMOND SHIELD    |
| (5)                          | 622C063020 | HOLDER-SCREEN-BOT       |
| (6)                          | 701B429050 | SCREEN-FRAME-TOP        |
| (7)                          | 701B430030 | SCREEN-FRAME-SIDE       |
| (8) (9)                      | 702A396020 | CORNER CAP              |
| (10)                         | 760D628050 | DIAMOND SHIELD          |
| <b>WS-55809 (Figure 1)</b>   |            |                         |
| (1)                          | 491P125010 | SCREEN-LENTICULAR       |
| (2)                          | 491P126010 | LENS-FRESNEL            |
| (3)                          | 702A391020 | PANEL-CONTROL           |
| (4)                          | 622C060040 | CLIP-SCREEN-TOP/BOT     |
| (5)                          | 622C063040 | HOLDER-SCREEN-BOT       |
| (6)                          | 701B400080 | FRAME-SCREEN-TOP        |
| (7)                          | 701B417010 | FRAME-SCREEN-SIDE       |
| (8)                          | 702A388030 | CAP-CORNER-LEFT         |
| (9)                          | 702A388040 | CAP-CORNER-RIGHT        |
| (10)                         | 760D627060 | DIAMOND SHIELD          |
| <b>WS-55819 (Figure 2)</b>   |            |                         |
| (1)                          | 491P125010 | SCREEN-LENTICULAR       |
| (2)                          | 491P126010 | LENS-FRESNEL            |

| Ref #                      | Part #     | Part Name & Description |
|----------------------------|------------|-------------------------|
| (9)                        | 622C071010 | CLIP-SCREEN-TOP/BOT     |
| (4)                        | 701B429010 | SCREEN-FRAME-TOP/BOTTOM |
| (5)                        | 701B430010 | SCREEN-FRAME - SIDE     |
| (7)                        | 702A396010 | CAP-CORNER              |
| (8)                        | 760D627060 | DIAMOND SHIELD          |
| <b>WS-65809 (Figure 1)</b> |            |                         |
| (1)                        | 491P105020 | SCREEN LENTICULAR       |
| (2)                        | 491P106020 | LENS-FRESNEL            |
| (3)                        | 702A393020 | PANEL-CONTROL           |
| (4)                        | 622C060050 | CLIP-SCREEN-TOP/BOT     |
| (5)                        | 622C059050 | HOLDER-SCREEN-BOT       |
| (6)                        | 701B425010 | FRAME-SCREEN-TOP        |
| (7)                        | 701B426030 | FRAME-SCREEN-SIDE       |
| (8)                        | 702A388030 | CAP-CORNER-LEFT         |
| (9)                        | 702A388040 | CAP-CORNER-RIGHT        |
| (10)                       | 760D627080 | DIAMOND SHIELD          |
| <b>WS-65819 (Figure 2)</b> |            |                         |
| (1)                        | 491P105010 | SCREEN-LENTICULAR       |
| (2)                        | 491P106010 | LENS-FRESNEL            |
| (9)                        | 622C071020 | CLIP-SCREEN-TOP/BOT     |
| (4)                        | 701B429020 | SCREEN-FRAME-TOP/BOTTOM |
| (5)                        | 701B430020 | SCREEN-FRAME - SIDE     |
| (7)                        | 702A396010 | CAP-CORNER              |
| (8)                        | 760D627070 | DIAMOND SHIELD          |



WT-46809  
WS-55809  
WS-65809

Figure 1: Screen Assembly Parts

**[#] Model Legend: (1) WS-55809, (2) WS-55819, (3) WS-65809, (4) WS-65819, (5) WT-46809**

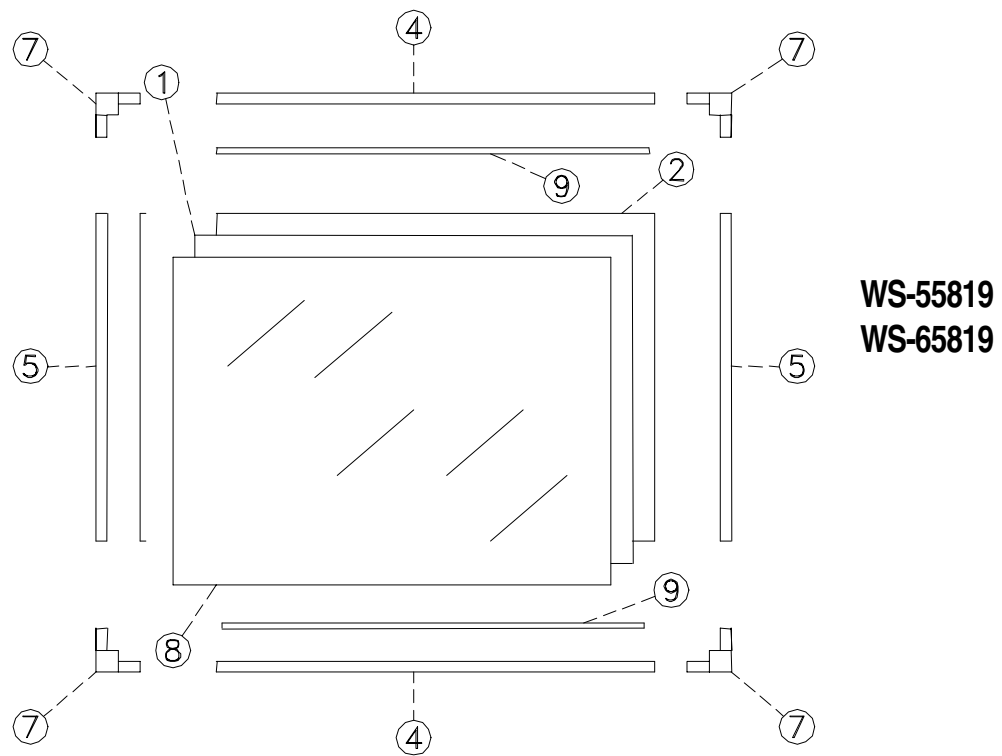
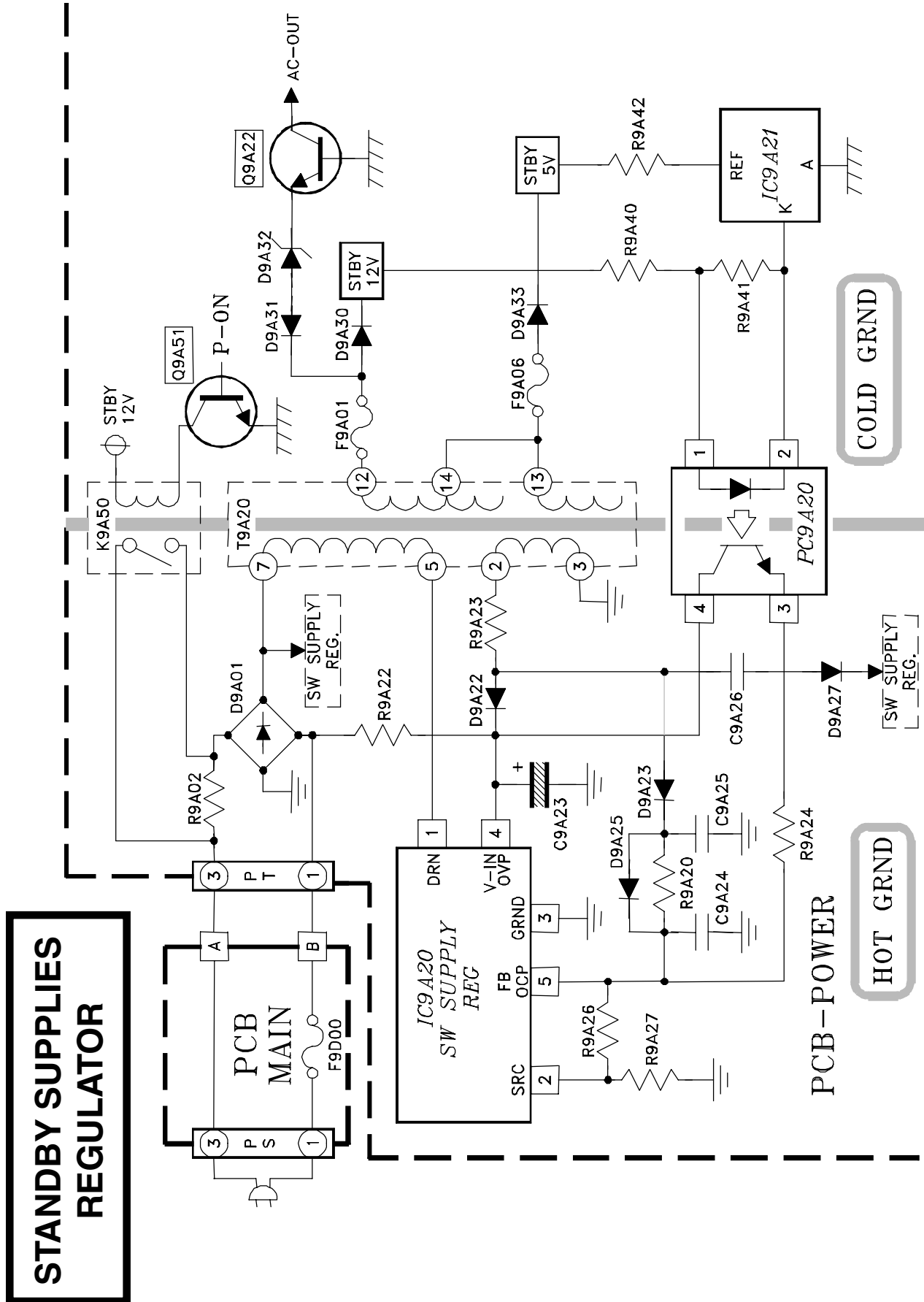
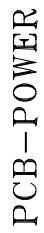


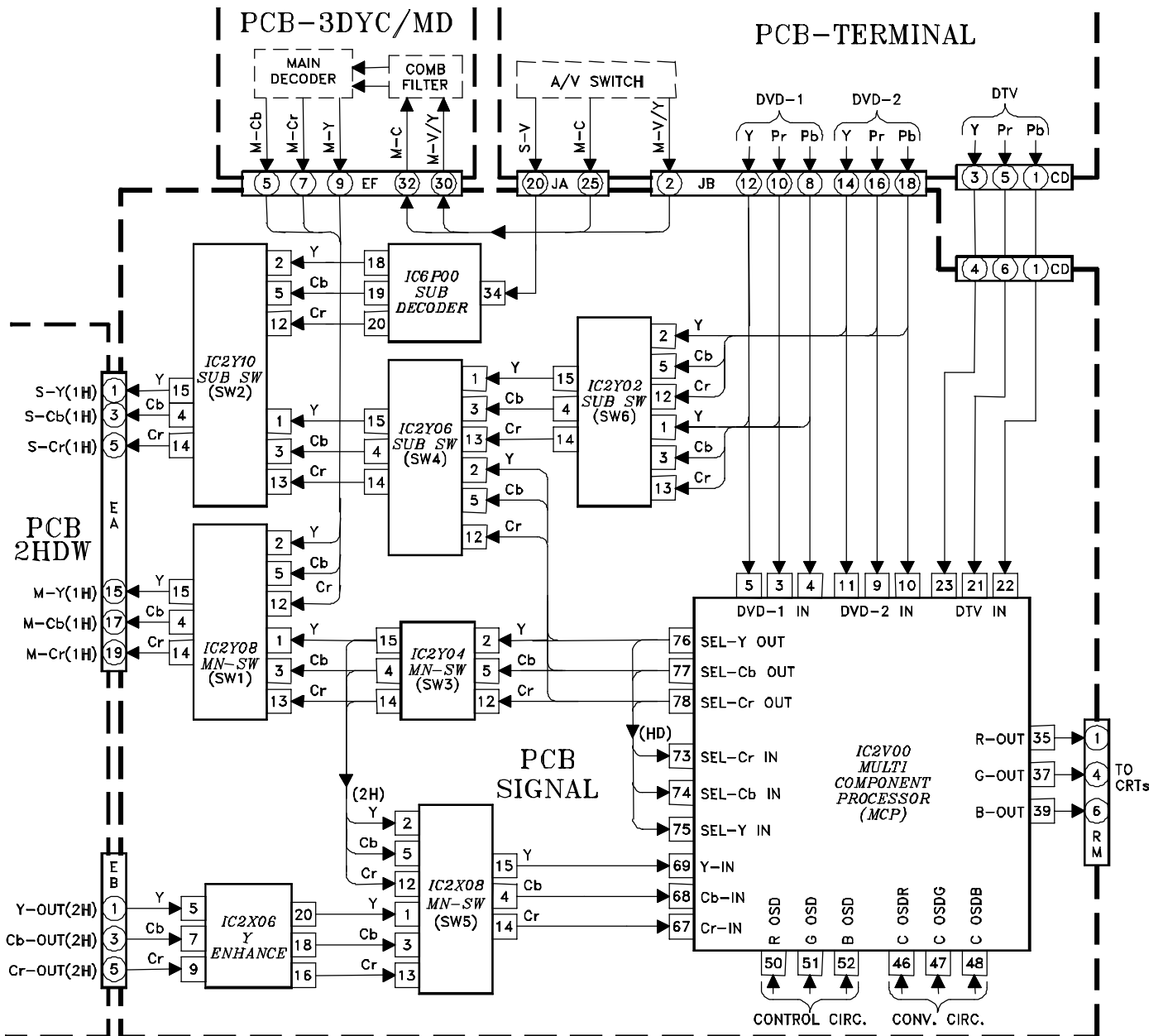
**Figure 2: Screen Assembly Parts**



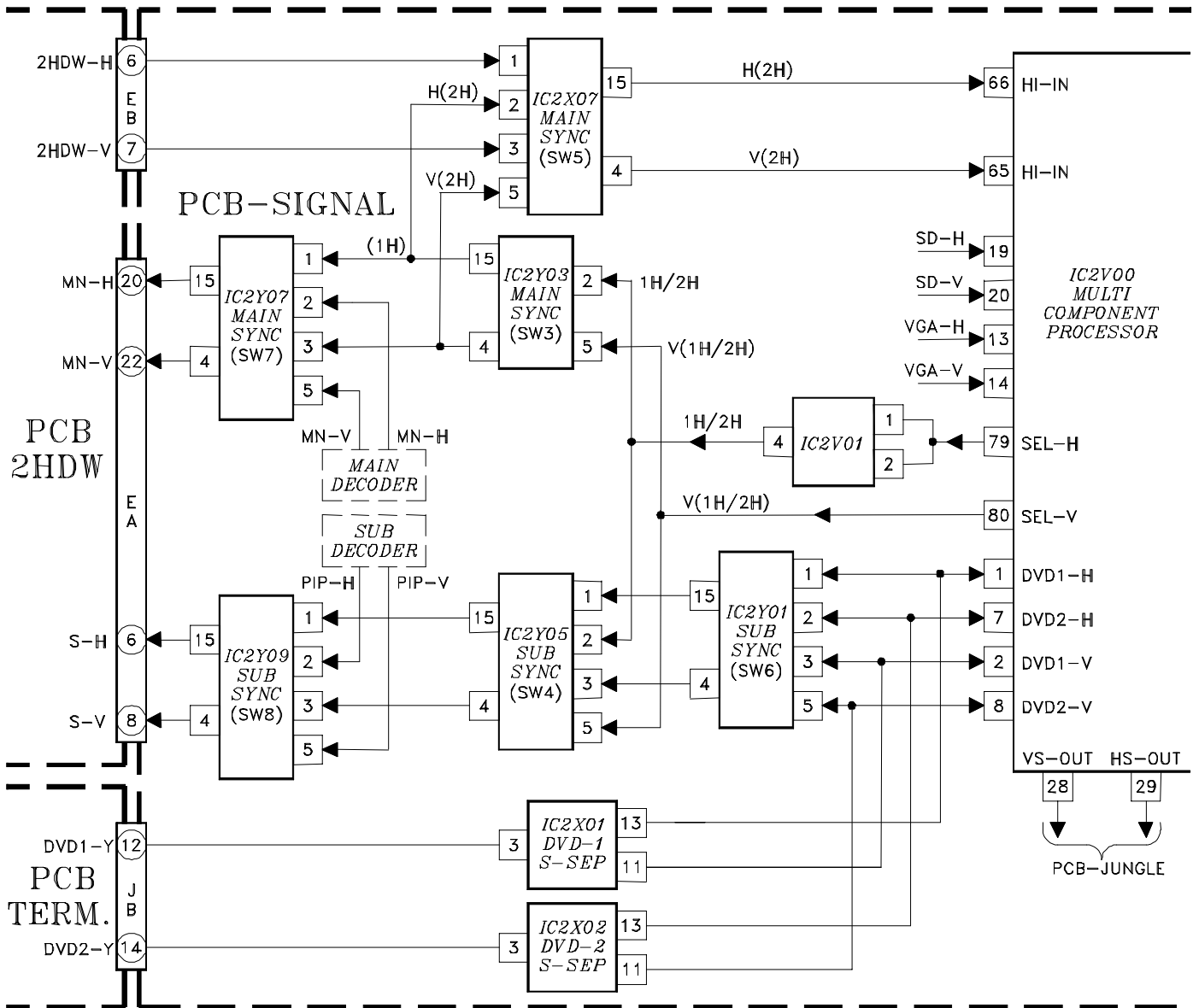




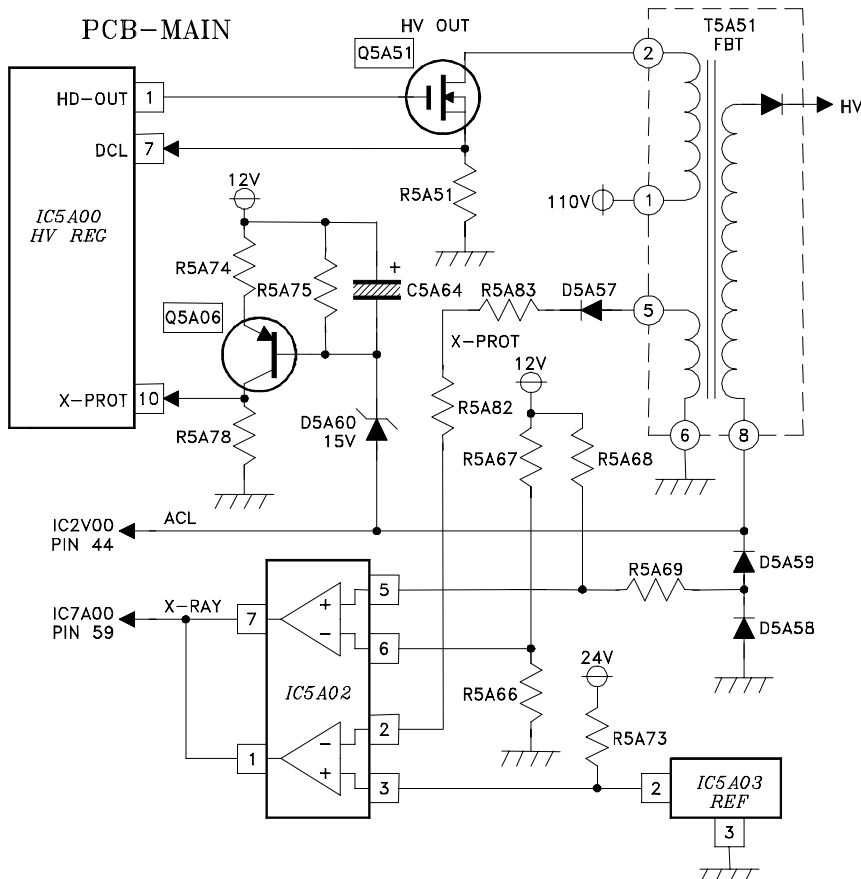
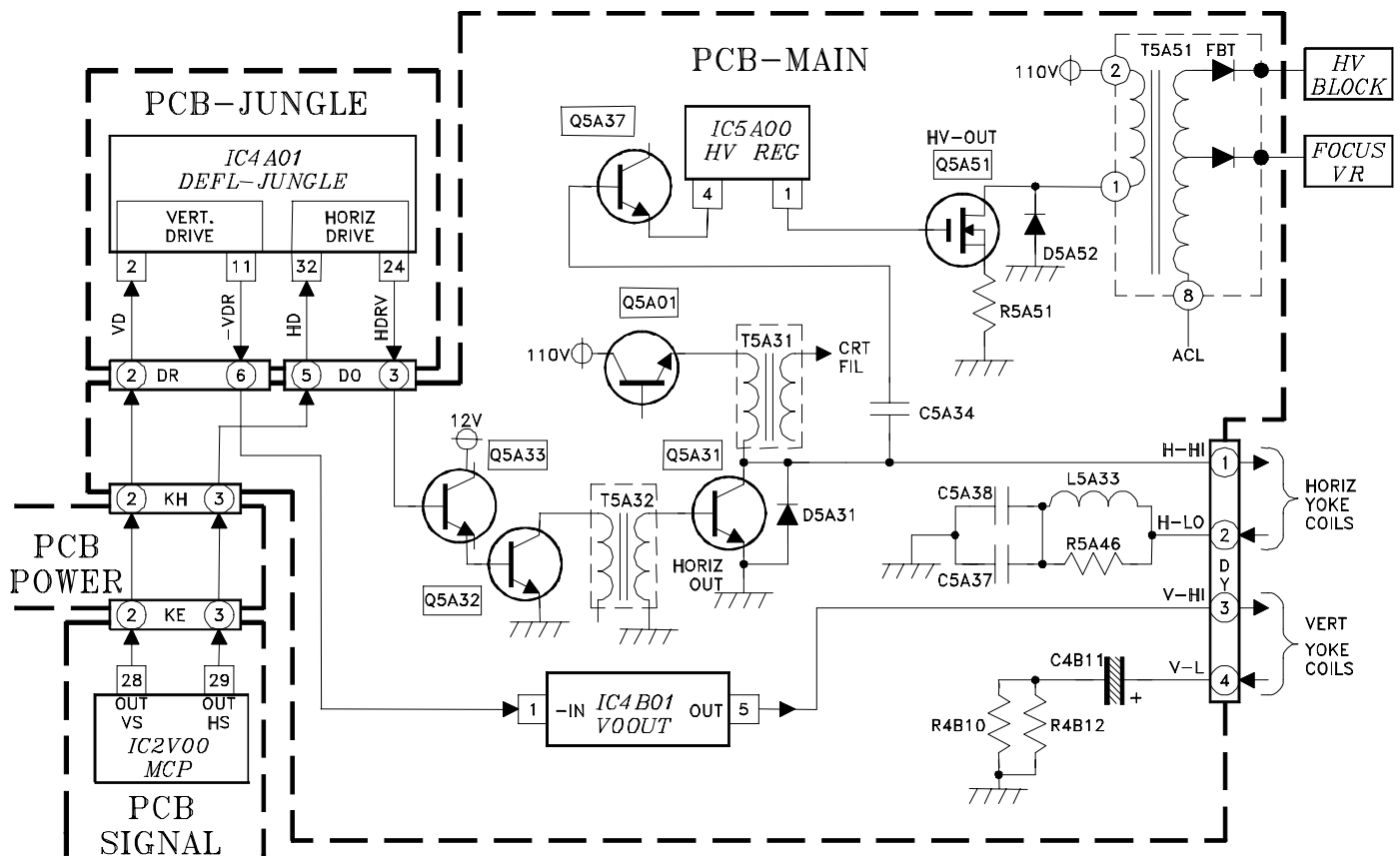
# PCB-SIGNAL Y/C PATH



# **SYNC PATH**

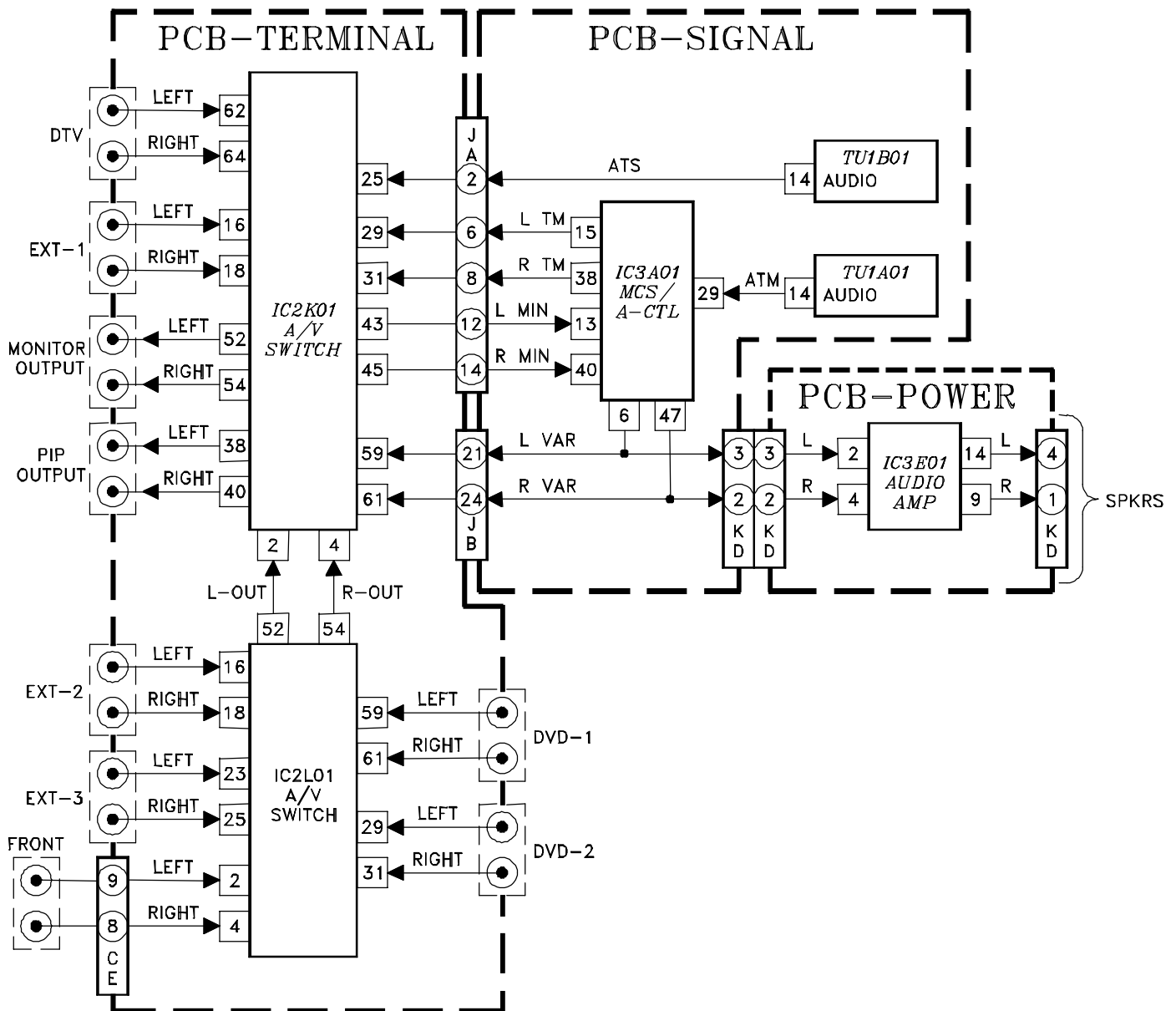


# DEFLECTION CIRCUIT

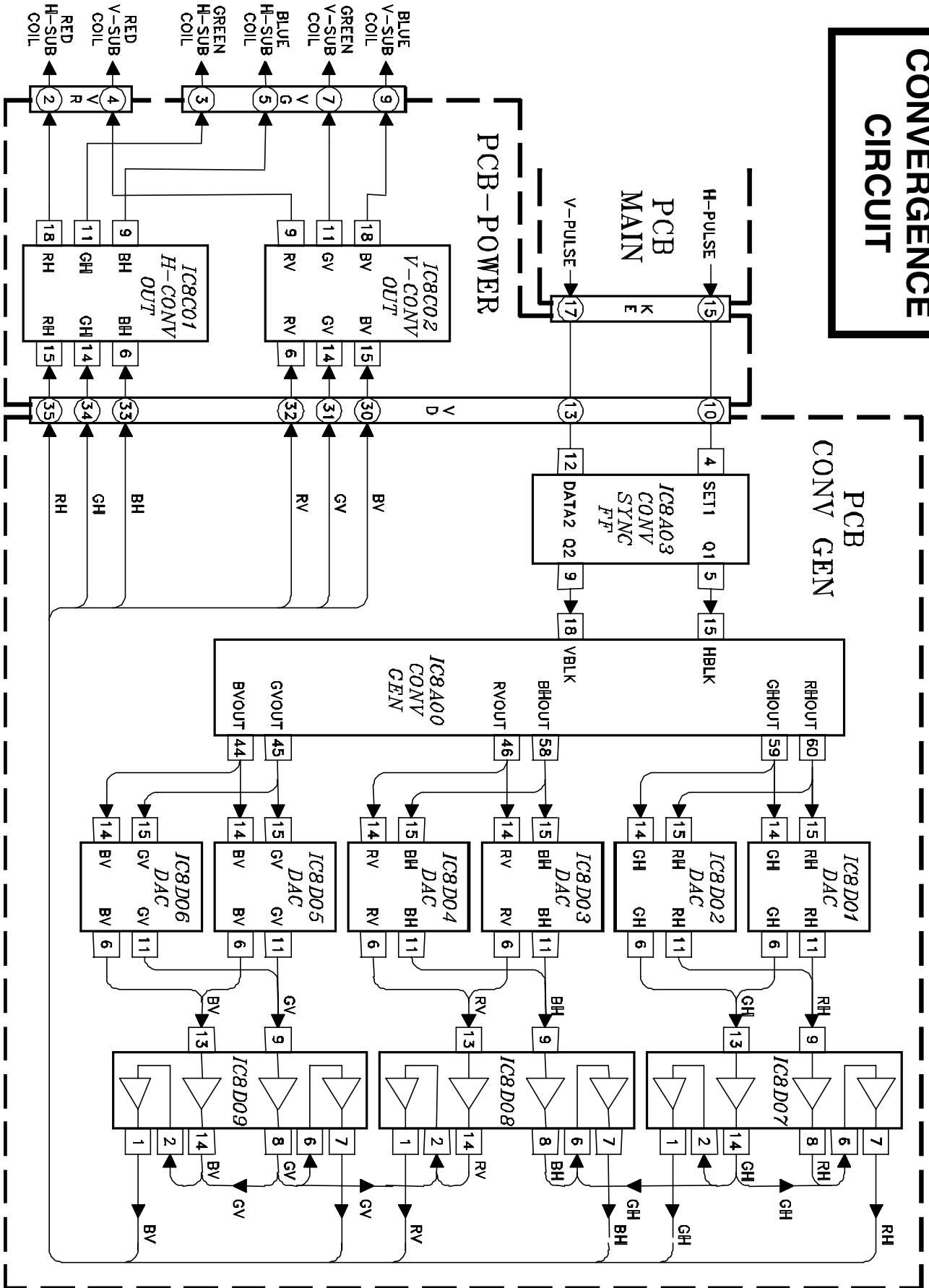


**X-RAY  
PROTECT**

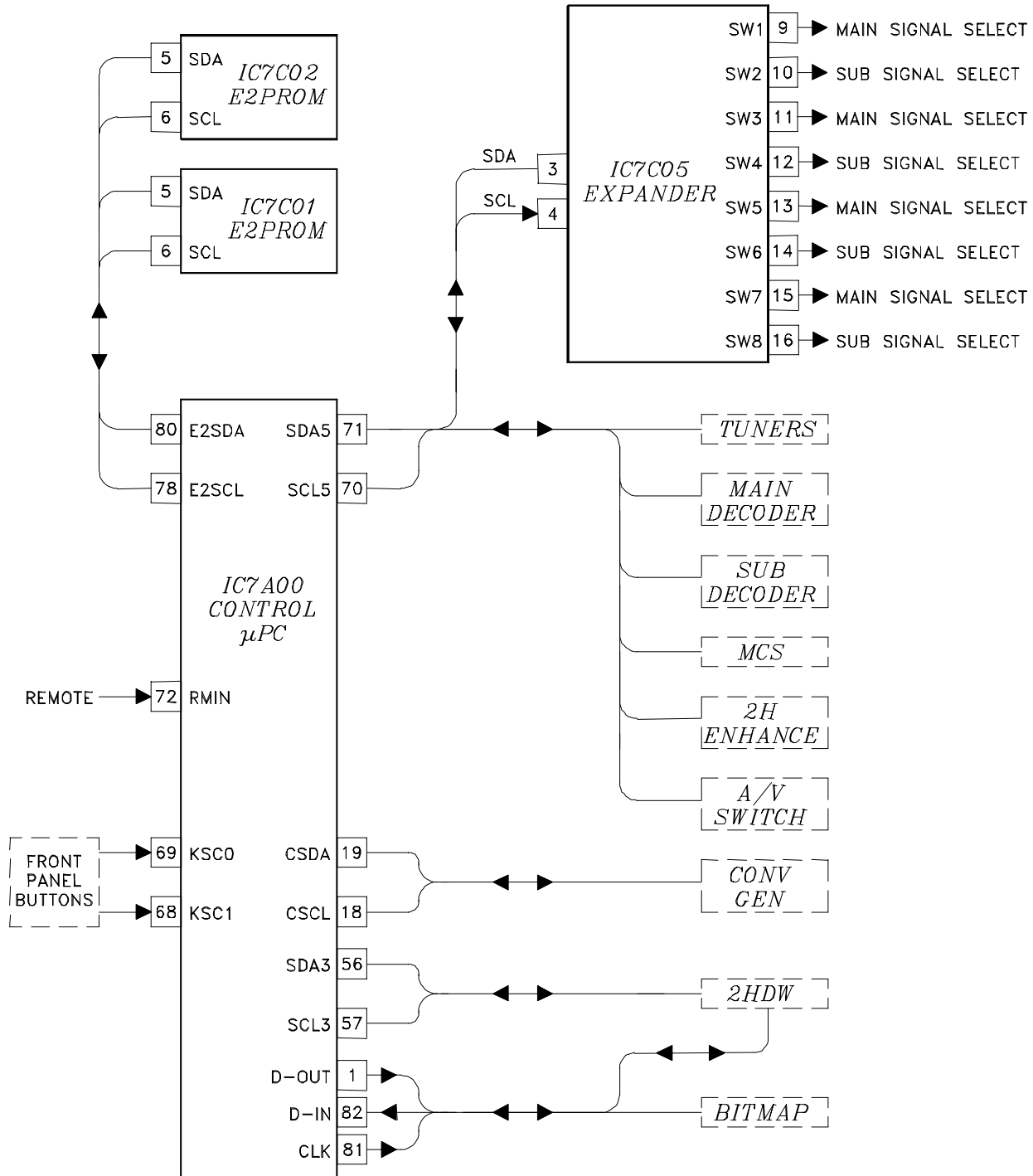
# SOUND CIRCUIT



# CONVERGENCE CIRCUIT



# CONTROL CIRCUIT

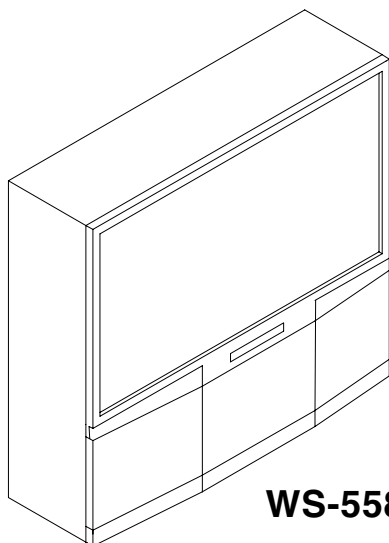




# Service Manual

PROJECTION TELEVISION

V18 / V18+ CHASSIS

**WS-55809**

## V18 MODELS

**WT-46809**  
**WS-55809**  
**WS-65809**

## V18+ MODELS

**WS-55819**  
**WS-65819**

**CAUTION:**

Before servicing this chassis, it is important that the service person read the "SAFETY PRECAUTIONS" and "PRODUCT SAFETY NOTICE" contained in this manual.

## PART 2

# SCHEMATIC DIAGRAMS

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| PCB-SIGNAL-2 (MICRO) .....                | 6           |
| PCB-SIGNAL-3 (VC/SW) .....                | 7           |
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**Refer to PART 1 for:**

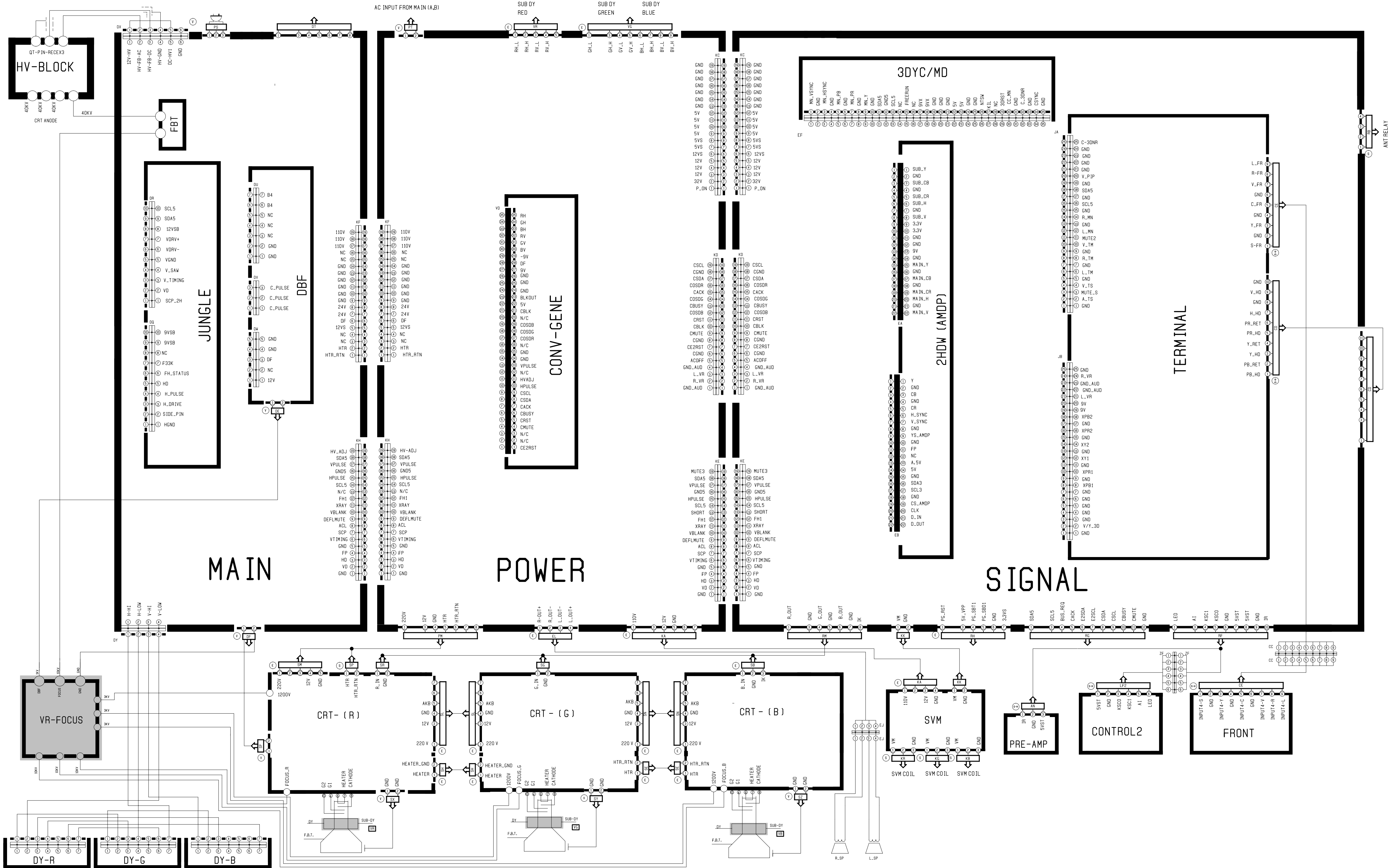
- Specifications
- Safety Precautions
- Disassembly
- CRT Replacement
- Electrical Adjustments
- Parts List
- Block Diagrams

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|                                                                                                   |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                |
|---------------------------------------------------------------------------------------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|
| NOTES                                                                                             |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                |
| 1. DC voltages were measured from points indicated to the circuit ground with a high-Z voltmeter. |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                |
| 2. Waveforms were taken with standard color bar signal                                            |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                |
| 3. TP13, etc., show Test Points                                                                   |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                |
| 4. CAPACITORS                                                                                     |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                |
| Value                                                                                             | Not indicated          | PF, for numbers more than 1<br>μF, for numbers less than 1                                                                                                                                                                                                                                                                                                                                                                        |                                                                |
| Dielectric Strength                                                                               | Not indicated          | +50V                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                |
| Tolerance                                                                                         | Not indicated = ±10%   |                                                                                                                                                                                                                                                                                                                                                                                                                                   | No tolerance is indicated for electrolytic capacitors and ±20% |
|                                                                                                   | G = ±2%                | P = +100%                                                                                                                                                                                                                                                                                                                                                                                                                         | Q = +30%<br>D = ±0.25PF<br>J = ±5%<br>K = ±10%<br>M = ±20%     |
| Type                                                                                              | Parts except for chips | Not indicated                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                |
|                                                                                                   |                        | +Ceramic capacitor<br>+Polyester capacitor<br>+Polypropylene film capacitor<br>+Aluminum electrolytic capacitor<br>+Twin film capacitor<br>+Semiconductor Ceramic capacitor<br>+Metalized paper<br>+Metalized plastic film capacitor<br>+Metalized polyester capacitor<br>+Polyester-polypropylene film capacitor<br>+Styrol capacitor<br>+Tantalum capacitor<br>+Electrolytic capacitor<br>+Non polarized electrolytic capacitor |                                                                |
| Chips                                                                                             | Not indicated          | +Ceramic capacitor chip<br>+Electrolytic capacitor<br>+Non polarized electrolytic capacitor chip                                                                                                                                                                                                                                                                                                                                  |                                                                |
|                                                                                                   |                        | +For B (high dielectric percentage)<br>+Temperature compensating types                                                                                                                                                                                                                                                                                                                                                            |                                                                |

|              |                        |                                                                                                                                                                                                                       |  |
|--------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| 5. RESISTORS |                        |                                                                                                                                                                                                                       |  |
| Value        | Not indicated = 0hm    | K = 1,000 Ohm<br>M = 1,000,000 Ohm                                                                                                                                                                                    |  |
| Wattage      | Parts except for chips | Not indicated = 1/4W or 1/8W                                                                                                                                                                                          |  |
|              | Chips                  | Not indicated = 1/10W                                                                                                                                                                                                 |  |
| Tolerance    | Not indicated          | = ±5%                                                                                                                                                                                                                 |  |
|              |                        | D = ±0.5%<br>F = ±1%                                                                                                                                                                                                  |  |
| Type         | Parts except for chips | Not indicated                                                                                                                                                                                                         |  |
|              |                        | +Carbon resistor<br>+Fixed composition resistor<br>+Metal oxide film resistor (type B)<br>+Cemented resistor<br>+Wire wound resistor<br>+Metal film resistor<br>+Metal plate cement resistor<br>+Metal liner resistor |  |
| Chip         | Not indicated          | +Chip resistor                                                                                                                                                                                                        |  |

6. This is a basic schematic diagram. Some sets may be subject to modification according to engineering improvement.

SHADED COMPONENTS HAVE SPECIAL CHARACTERISTICS IMPORTANT TO SAFETY. BEFORE REPLACING ANY OF THESE COMPONENTS READ CAREFULLY THE PRODUCT SAFETY NOTICE IN THE SERVICE MANUAL. DON'T DEGRADE THE SAFETY OF THE RECEIVERS THROUGH IMPROPER SERVICING.

SERVICE TECHNICIAN WARNING:  
X-RADIATION PRECAUTION  
THIS PRODUCT INCLUDES CRITICAL ELECTRICAL AND MECHANICAL PARTS ESSENTIAL FOR X-RADIATION PROTECTION.  
TO AVOID POSSIBLE EXPOSURE TO X-RADIATION TAKE X-RADIATION PROTECTIVE MEASURES FOR PERSONNEL DURING SERVICING.  
SEE SERVICE INSTRUCTIONS FOR SPECIFIED REPLACEMENT PARTS AND SERVICE ADJUSTMENTS.

|                                 |          |
|---------------------------------|----------|
| CONTENTS                        | WS-55809 |
| PG.1... BLOCK DIAGRAM           | WS-55809 |
| PG.2... MAIN                    | WS-55809 |
| PG.3... POWER                   | WS-55809 |
| PG.4... TERMINAL                | WS-55809 |
| PG.5... SIGNAL-1 (AV 1/0)       |          |
| PG.6... SIGNAL-2 (MICRO)        |          |
| PG.7... SIGNAL-3 (V/C/SW)       |          |
| PG.8... 3DYC                    |          |
| PG.9... CONV GEN / JUNGLE       |          |
| PG.10... CRT/CONTROL A1/SVM/DBF |          |
| PG.11... 2HDW-1                 |          |
| PG.12... 2HDW-2                 |          |
| PG.13... 2HDW-3                 |          |

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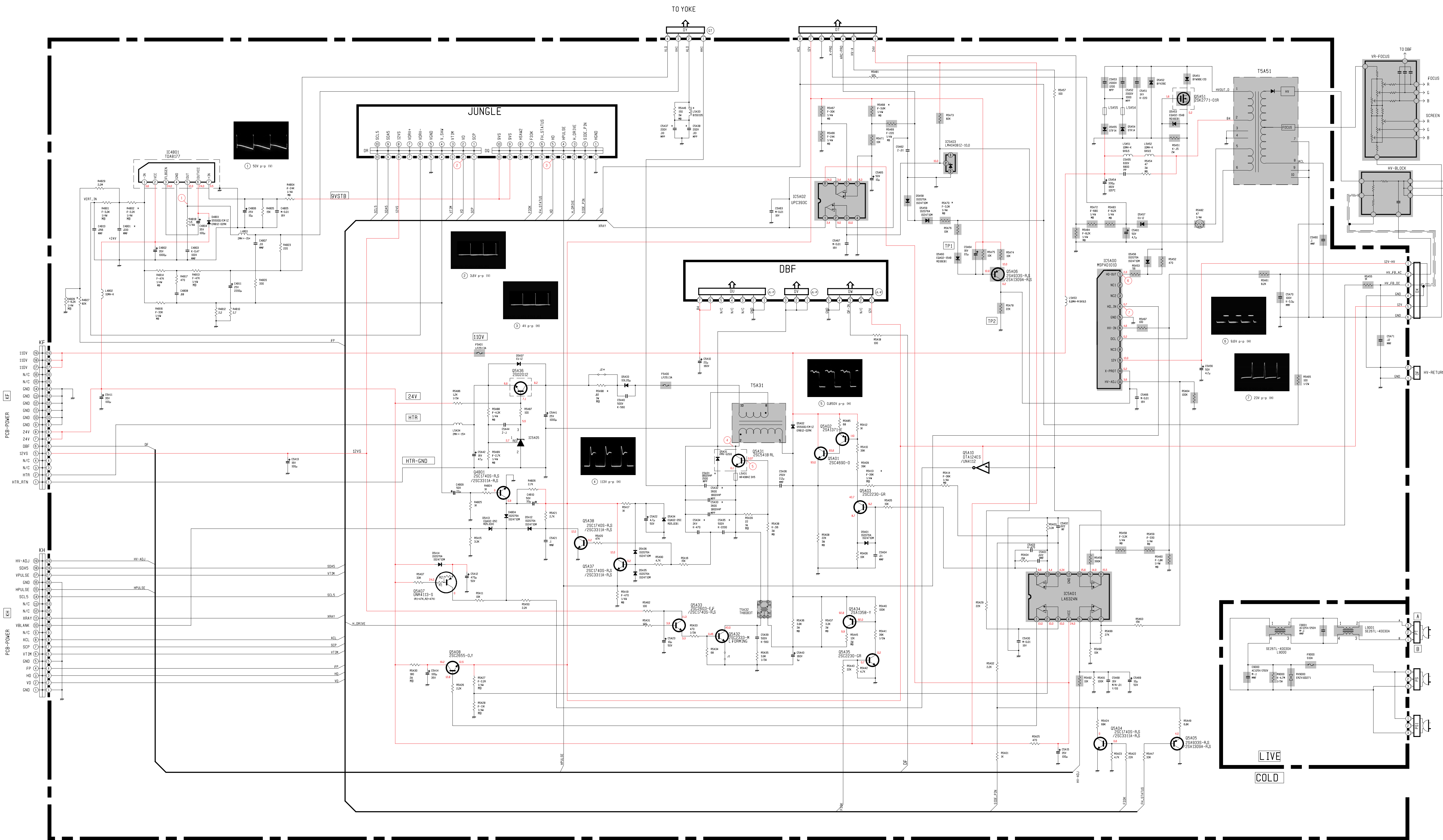
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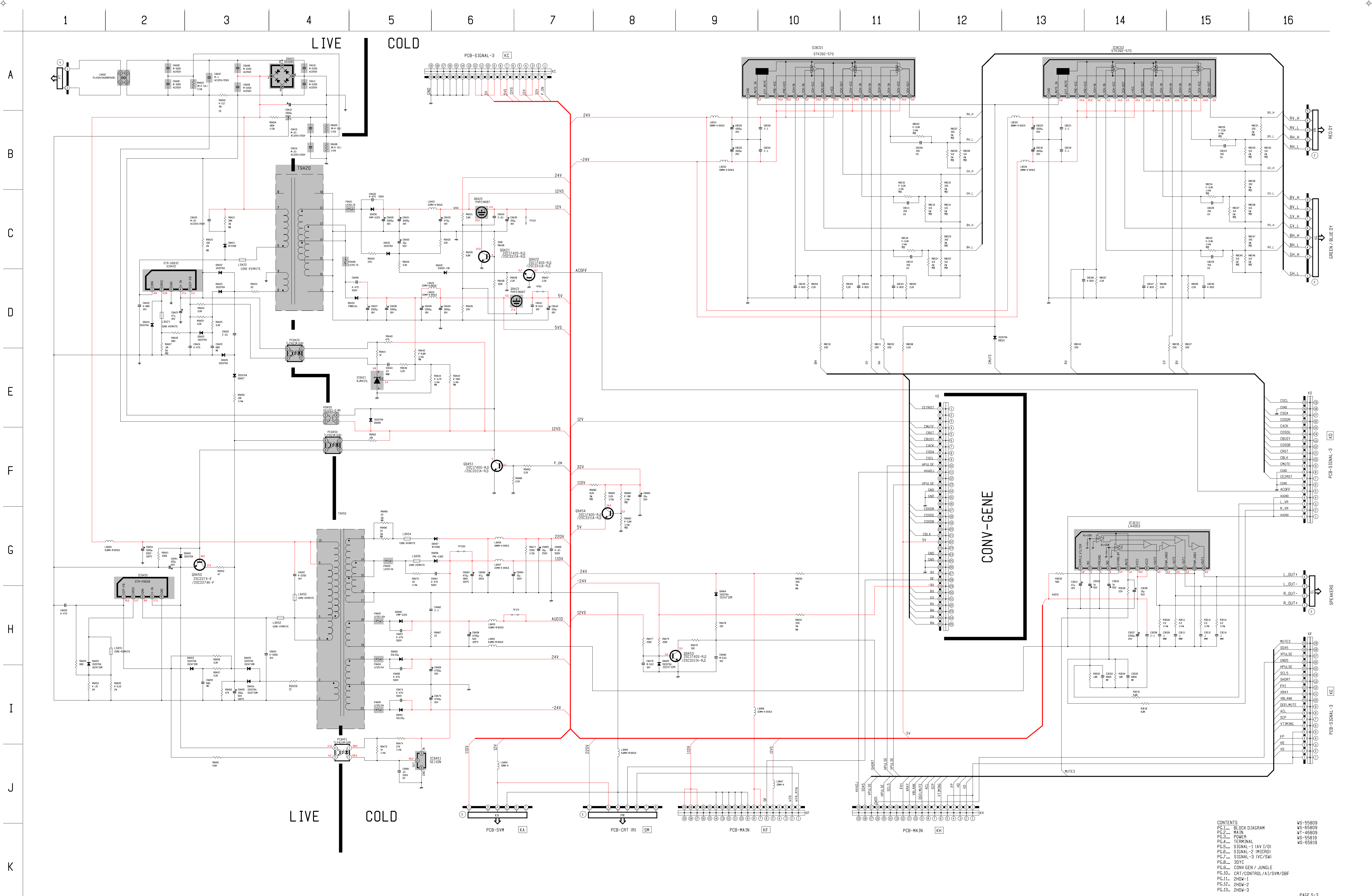
K



| MODELS   | C5A37*       | C5A38*       | R5A6B* | R5A70* | R5A13* | R5A9B*   | J2* | R4B02* | R4B28* | C4B01*   | C5A31*          | C5A32*          | C5A33*          | C5A34*    | C5A35*      | L5A33*     |
|----------|--------------|--------------|--------|--------|--------|----------|-----|--------|--------|----------|-----------------|-----------------|-----------------|-----------|-------------|------------|
| WT-46809 | 250V .39 MPP | 250V .39 MPP | F-3.6K | F-3.3K | F-3.3K | X        | 0   | F-3.0K | F-7.5K | 50V .033 | X               | 1.8KV .0036MPP  | 1.8KV .0036MPP  | 2KV K-470 | 500V K-4700 | 333P059-10 |
| 55"      | 250V .27 MPP | 250V .27 MPP | F-3.6K | F-3.3K | F-3.3K | 3W .82-J | X   | F-3.0K | F-6.2K | 50V .039 | X               | 1.8KV .0036MPP  | 1.8KV .0036MPP  | 2KV K-470 | 500V K-4700 | 333P059-10 |
| 65"      | 250V .33 MPP | 250V .33 MPP | F-3.6K | F-3.3K | F-3.3K | 3W .82-J | X   | F-2.2K | F-6.2K | 50V .039 | 1.8KV .0015 MPP | 1.8KV .0033 MPP | 1.8KV .0036 MPP | 2KV K-220 | 500V K-2200 | 333P052-30 |

CONTENTS  
PG.1... BLOCK DIAGRAM  
PG.2... MAIN  
PG.3... POWER  
PG.4... TERMINAL  
PG.5... SIGNAL-1 (AV I/O)  
PG.6... SIGNAL-2 (MICRO)  
PG.7... SIGNAL-3 (VC/SW)  
PG.8... 50°C  
PG.9... CONV GEN / JUNGLE  
PG.10... CRT/CONTROL A1/SW/DBF  
PG.11... 2HDW-1  
PG.12... 2HDW-2  
PG.13... 2HDW-3

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WS-55819



| CONTENTS                       | WS-55809 |
|--------------------------------|----------|
| PG.1... BLOCK DIAGRAM          | WS-55809 |
| PG.2... MAIN                   | WS-55809 |
| PG.3... POWER                  | WS-55809 |
| PG.4... TERMINAL               | WS-55809 |
| PG.5... SIGNAL-1 (AV 1/0)      | WS-55809 |
| PG.6... SIGNAL-2 (MICRO)       |          |
| PG.7... SIGNAL-3 (VC/SW)       |          |
| PG.8... SDIC                   |          |
| PG.9... CONV GEN / JUNGLE      |          |
| PG.10... CRT/CONTROL A1/SW/DBF |          |
| PG.11... 2HDW-1                |          |
| PG.12... 2HDW-2                |          |
| PG.13... 2HDW-3                |          |

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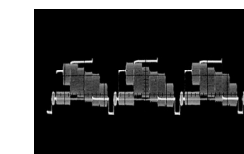
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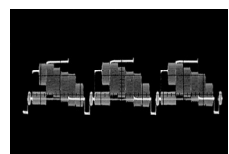
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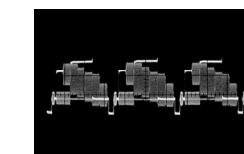
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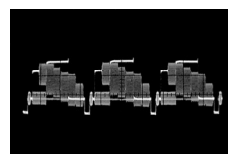
① 1V p-p IH



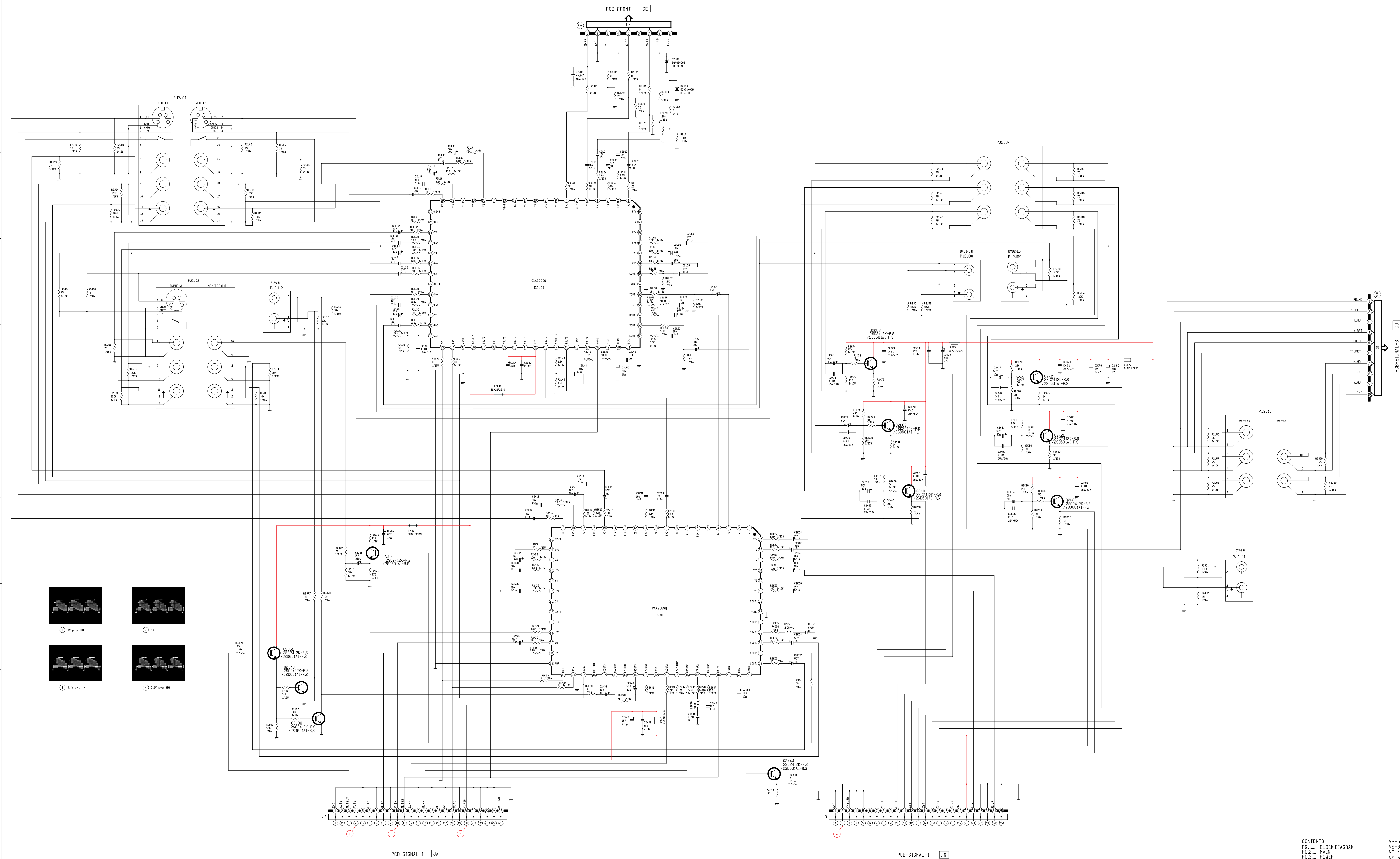
② 1V p-p IH



③ 2.1V p-p IH



④ 2.1V p-p IH



| CONTENTS |                       |
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| PG.1...  | BLOCK DIAGRAM         |
| PG.2...  | MAIN                  |
| PG.3...  | POWER                 |
| PG.4...  | TERMINAL              |
| PG.5...  | SIGNAL-1 (AV 1/0)     |
| PG.6...  | SIGNAL-2 (MICRO)      |
| PG.7...  | SIGNAL-3 (VC/SW)      |
| PG.8...  | SDC                   |
| PG.9...  | CONV GEN / JUNGLE     |
| PG.10... | CR1/CONTROL A1/SW/DBF |
| PG.11... | 2HDW-1                |
| PG.12... | 2HDW-2                |
| PG.13... | 2HDW-3                |

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| WS-55809 |
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| WT-46809 |
| WS-55819 |
| WS-55819 |

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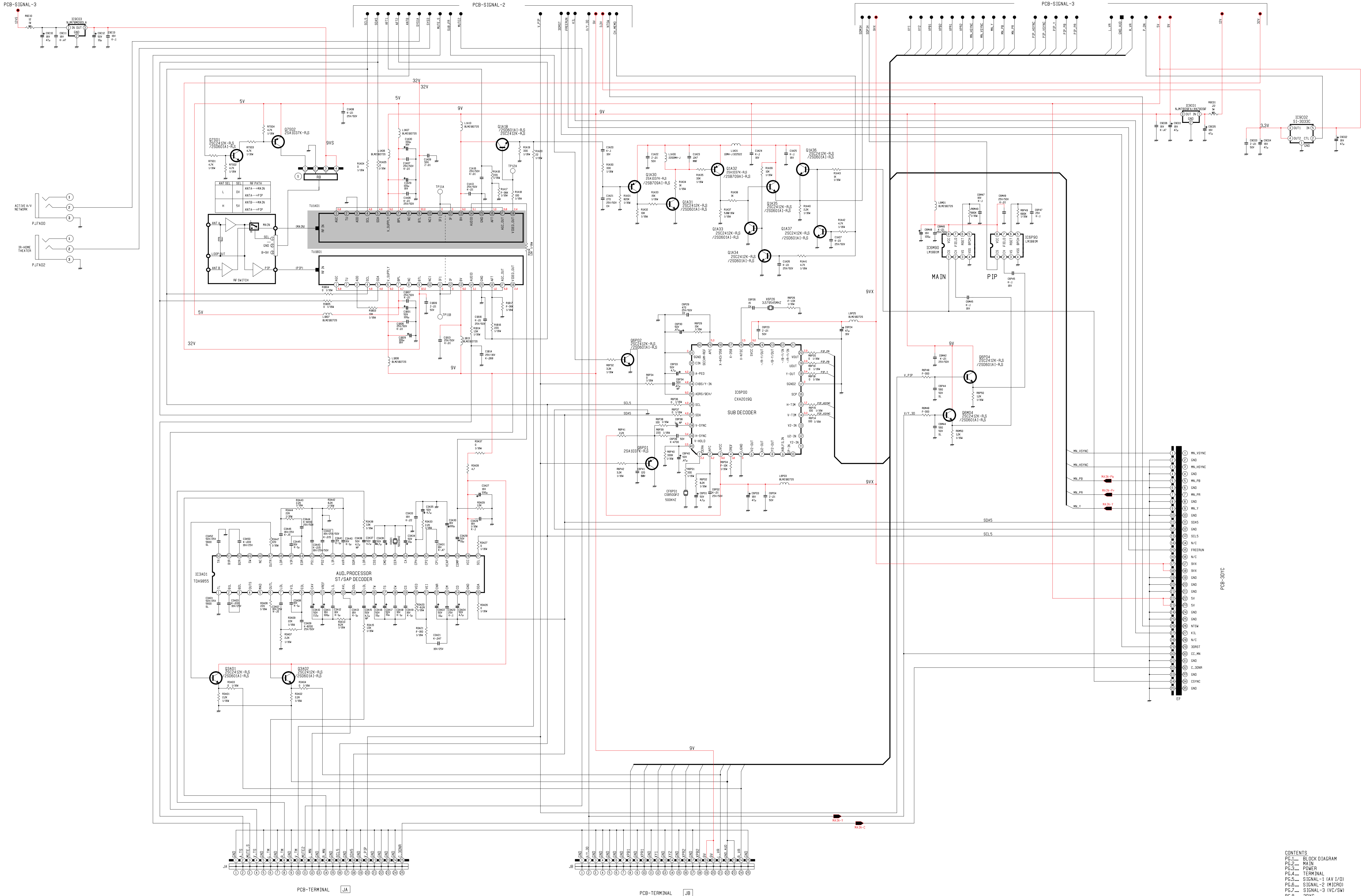
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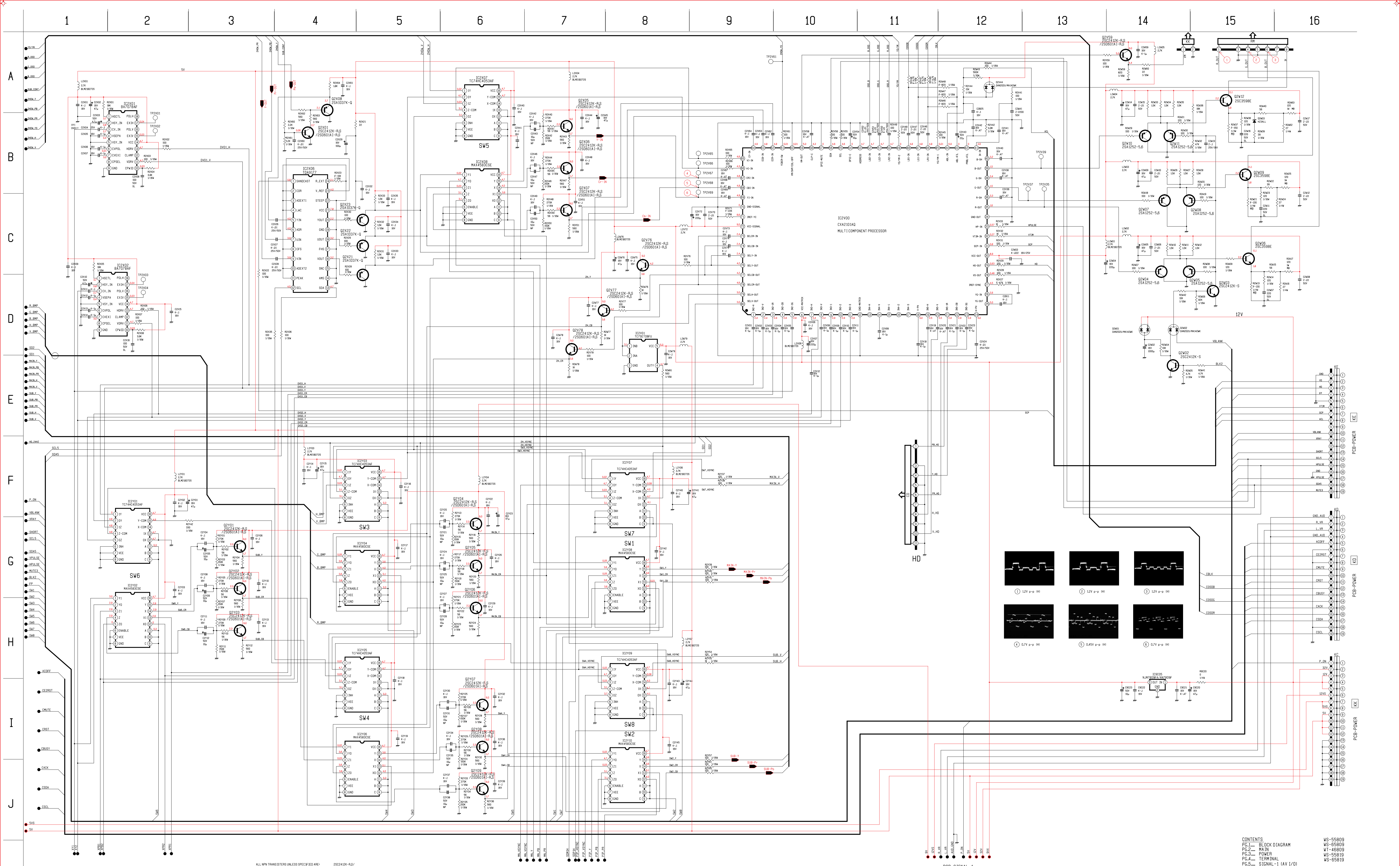
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|-------------------------------|----------|
| CONTENTS                      | WS-55809 |
| PC1... BLOCK DIAGRAM          | WS-55809 |
| PC2... MAIN                   | WT-46809 |
| PC3... POWER                  | WS-55819 |
| PC4... TERMINAL               | WS-55819 |
| PC5... SIGNAL-1 (AV I/O)      |          |
| PC6... SIGNAL-2 (MICRO)       |          |
| PC7... SIGNAL-3 (VC/SW)       |          |
| PC8... SDIC                   |          |
| PC9... CONV GEN / JUNGLE      |          |
| PC10... CRT/CONTROL A1/SW/DBF |          |
| PC11... 2HDW-1                |          |
| PC12... 2HDW-2                |          |
| PC13... 2HDW-3                |          |





ALL NPN TRANSISTORS UNLESS SPECIFIED ARE 2SC2412K-RS / 250601A1-RS  
\* EXCEPT WHERE NOTED, ALL OPEN-ENDED CIRCUIT PATHS CONNECT TO THE SIGNAL-2 SCHEMATIC

| CONTENTS |                       |
|----------|-----------------------|
| PG.1...  | BLACK DIAGRAM         |
| PG.2...  | MAIN                  |
| PG.3...  | POWER                 |
| PG.4...  | TERMINAL              |
| PG.5...  | SIGNAL-1 (AV I/O)     |
| PG.6...  | SIGNAL-2 (MICRO)      |
| PG.7...  | SIGNAL-3 (VC/SW)      |
| PG.8...  | SDIC                  |
| PG.9...  | CONV GEN / JUNGLE     |
| PG.10... | CR1/CONTROL A1/SW/DBF |
| PG.11... | 2HDW-1                |
| PG.12... | 2HDW-2                |
| PG.13... | 2HDW-3                |

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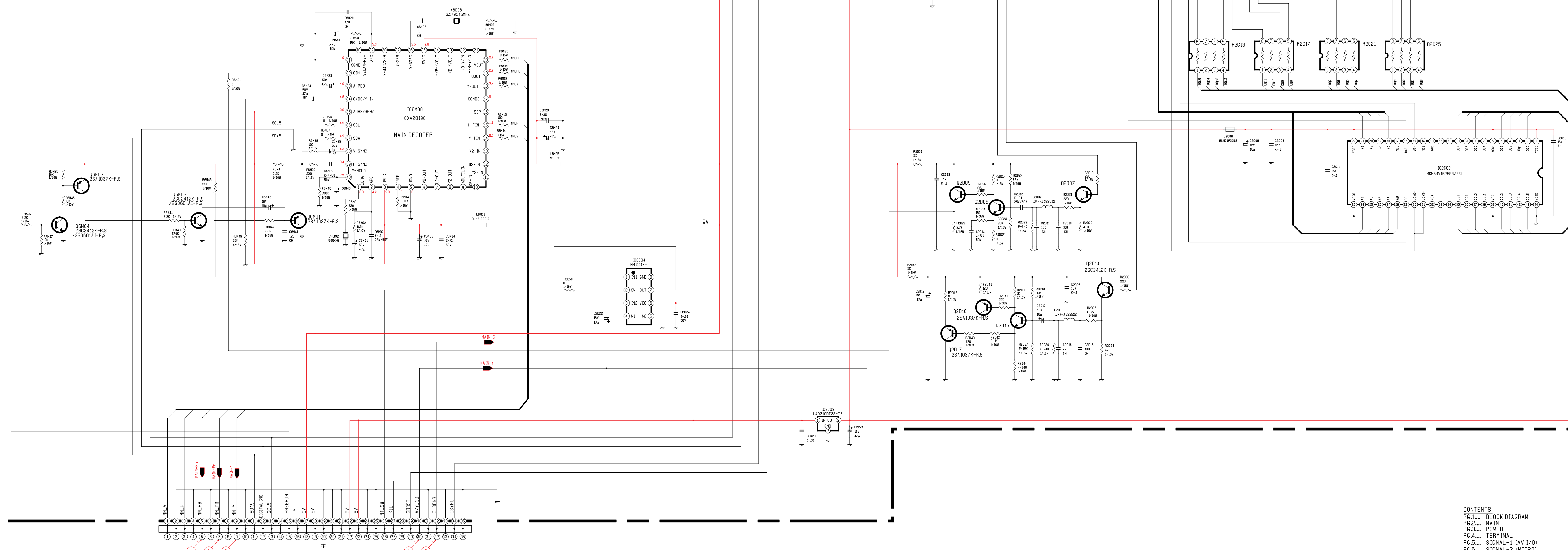
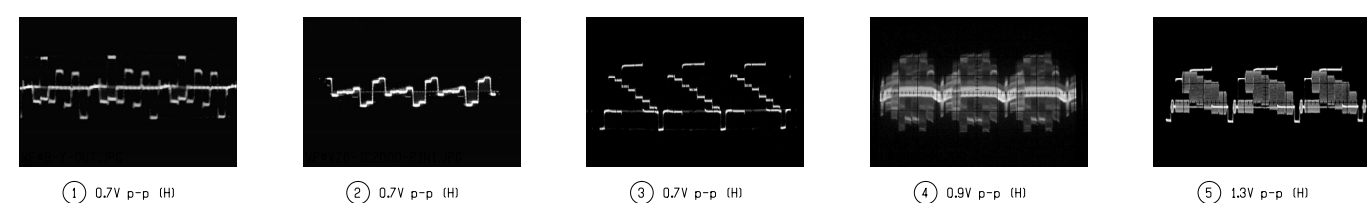
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| <b>CONTENTS</b> |                        | WS-55809 |
| PG.1....        | BLOCK DIAGRAM          | WS-65809 |
| PG.2....        | MAIN                   | NT-45809 |
| PG.3....        | POWER                  | WS-55810 |
| PG.4....        | TERMINAL               | WS-65819 |
| PG.5....        | SIGNAL-1 (AV I/O)      |          |
| PG.6....        | SIGNAL-2 (MICRO)       |          |
| PG.7....        | SIGNAL-3 (VC/SW)       |          |
| PG.8....        | 30YC                   |          |
| PG.9....        | CONV GEN / JUNGLE      |          |
| PG.10..         | CRT/CONTROL/AT/SVM/DBF |          |
| PG.11..         | 2HDW-1                 |          |
| PG.12..         | 2HDW-2                 |          |
| PG.13..         | 2HDW-3                 |          |



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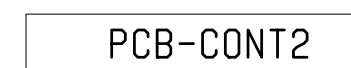
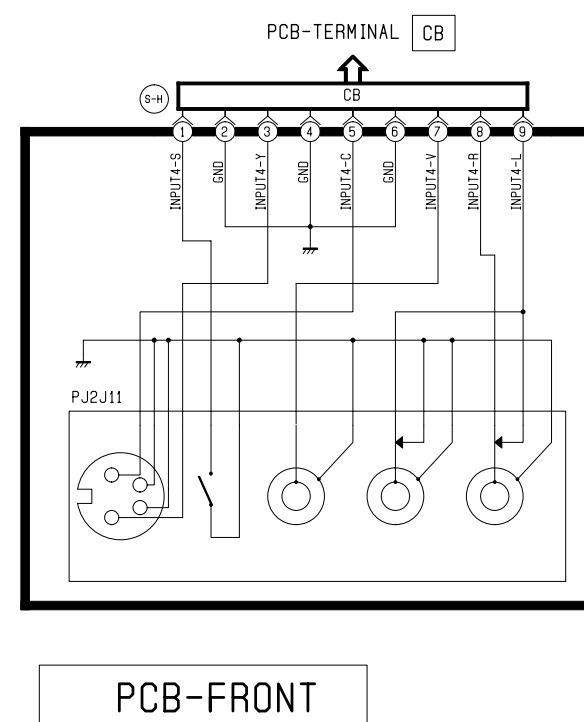
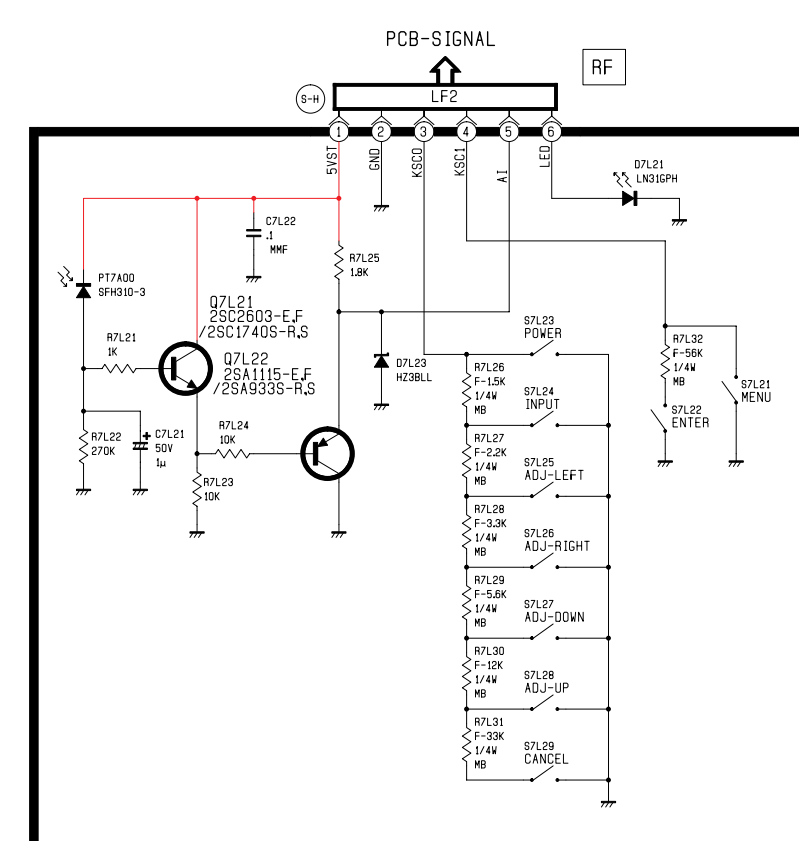
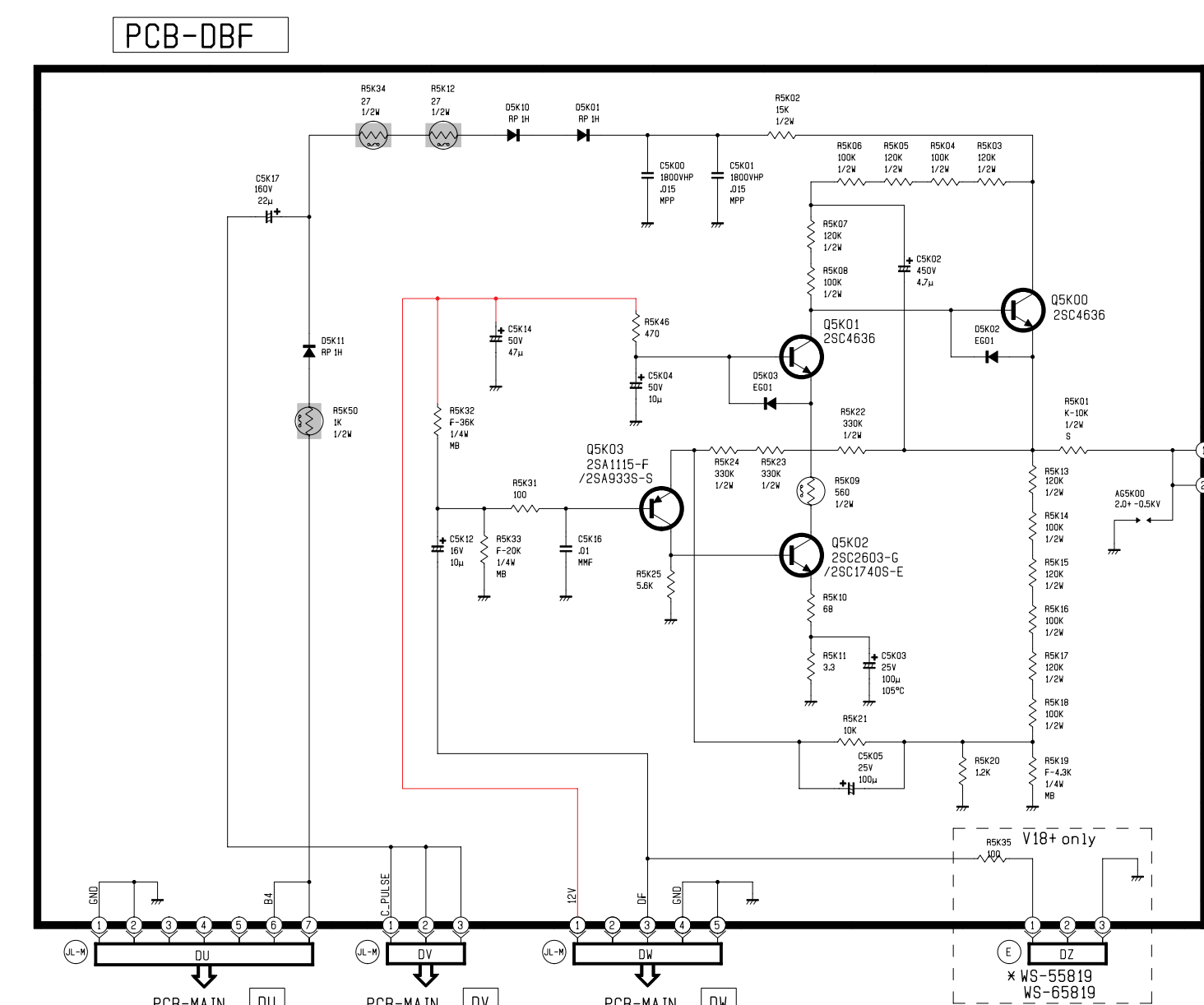
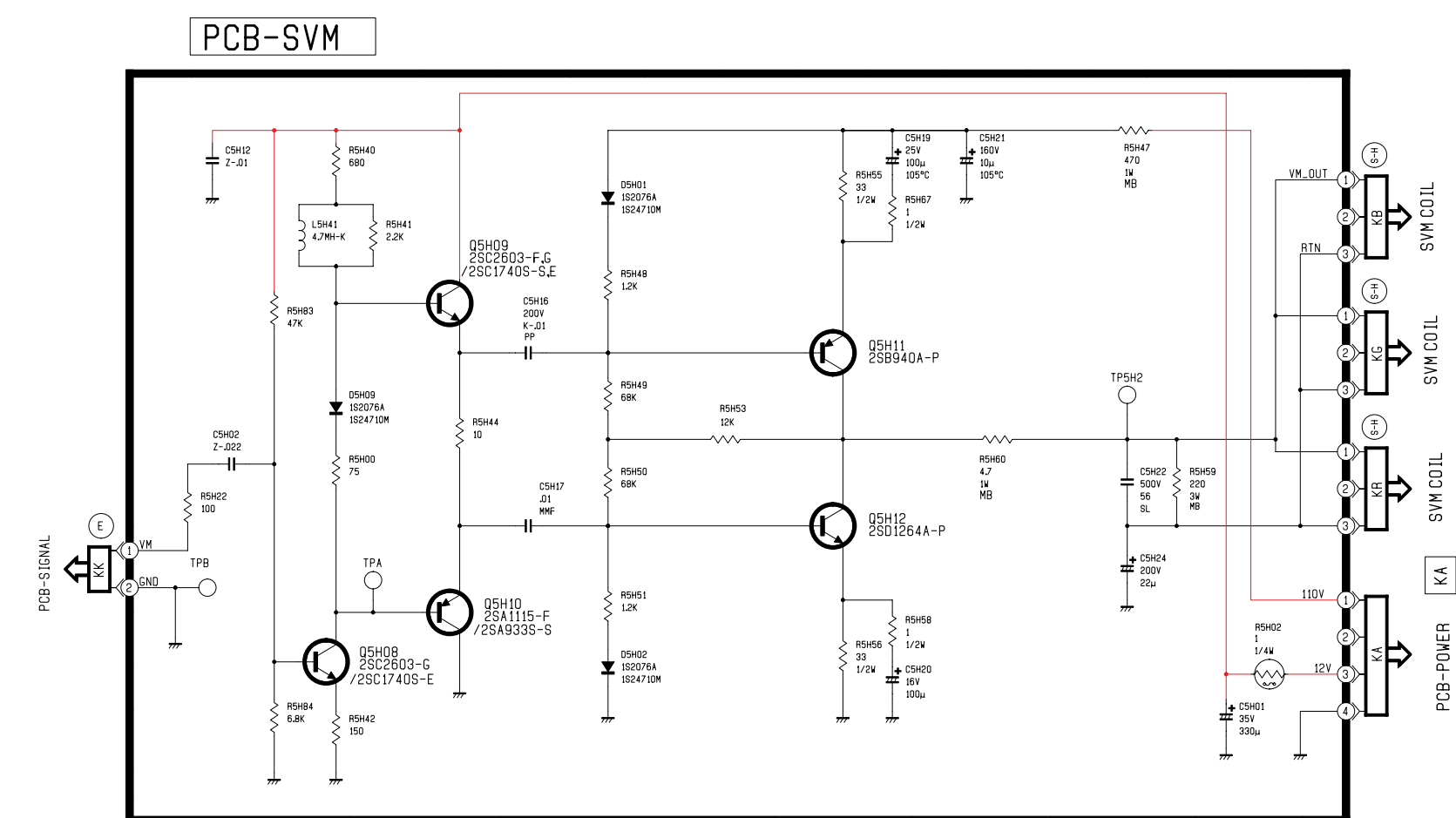
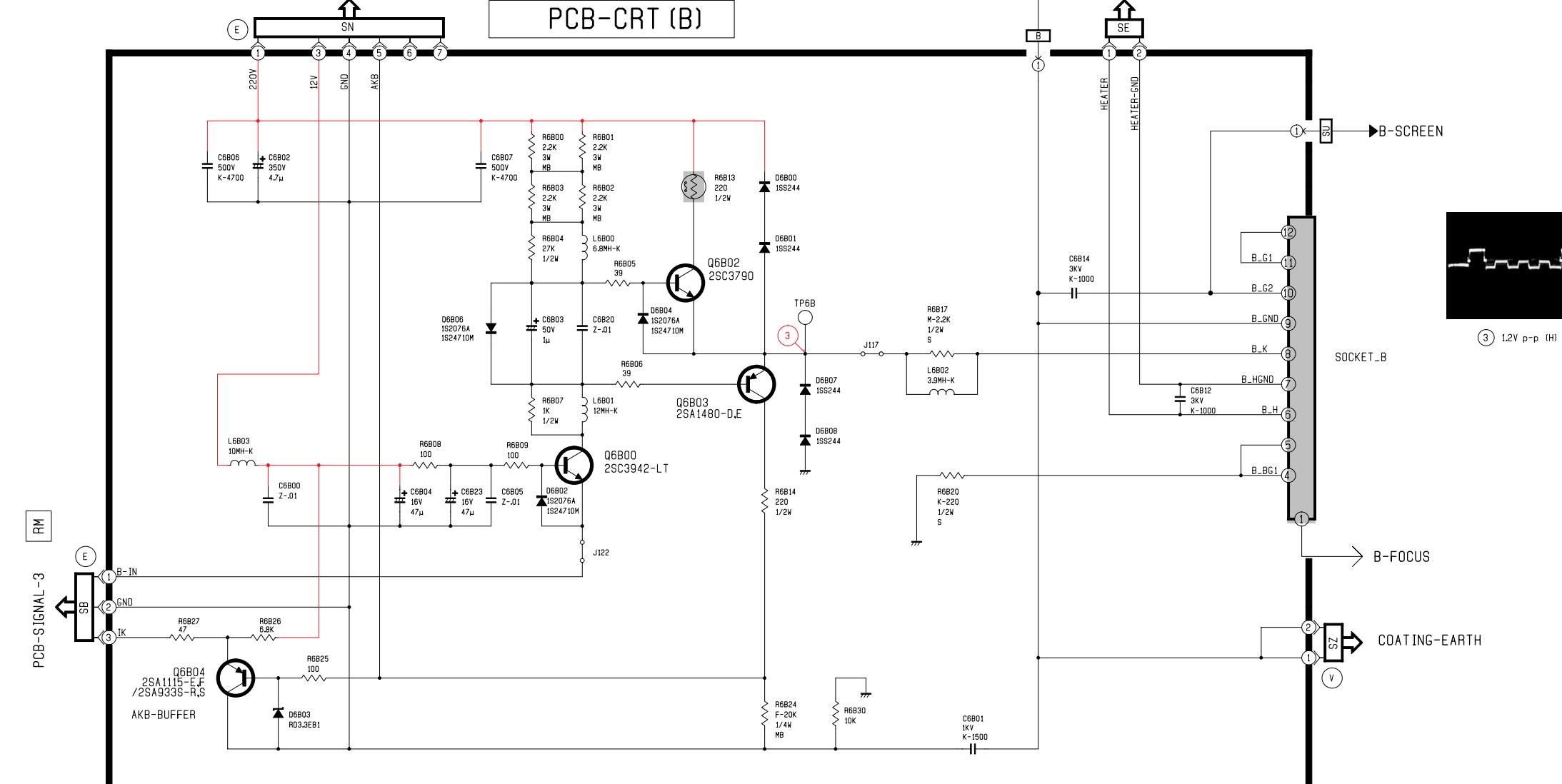
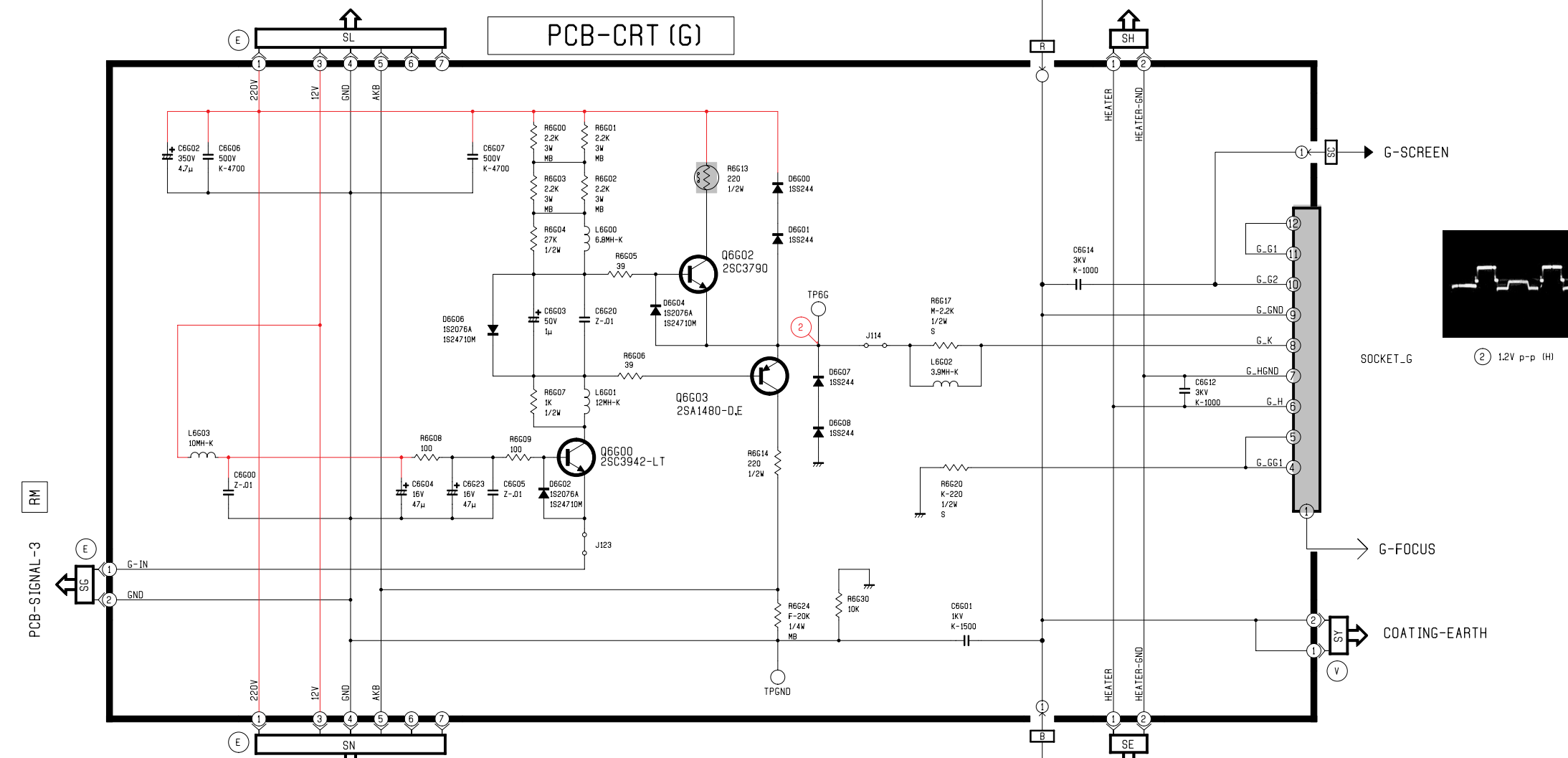
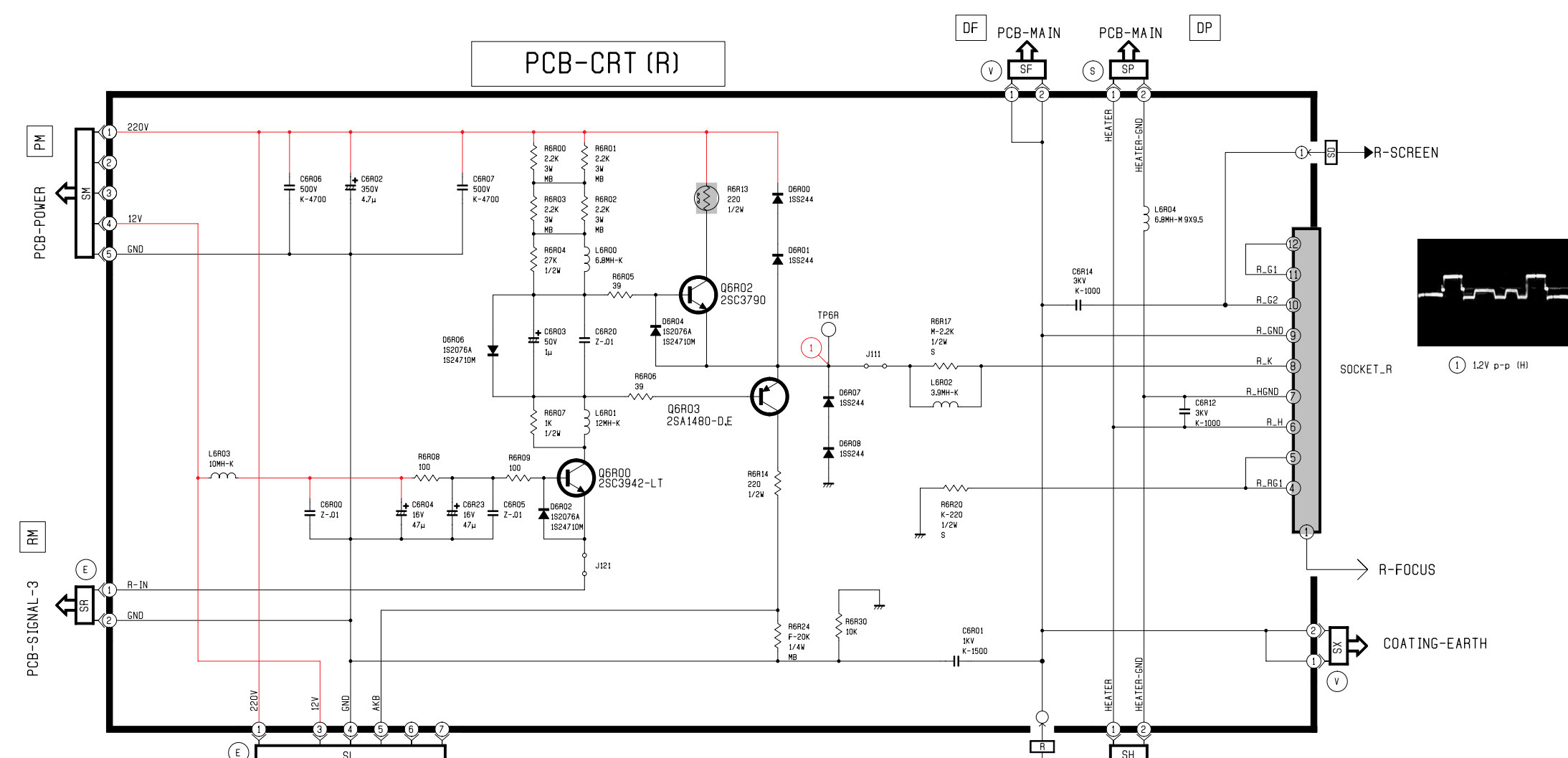
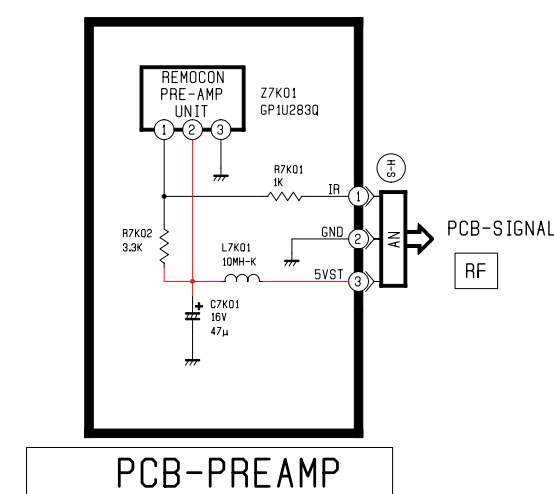
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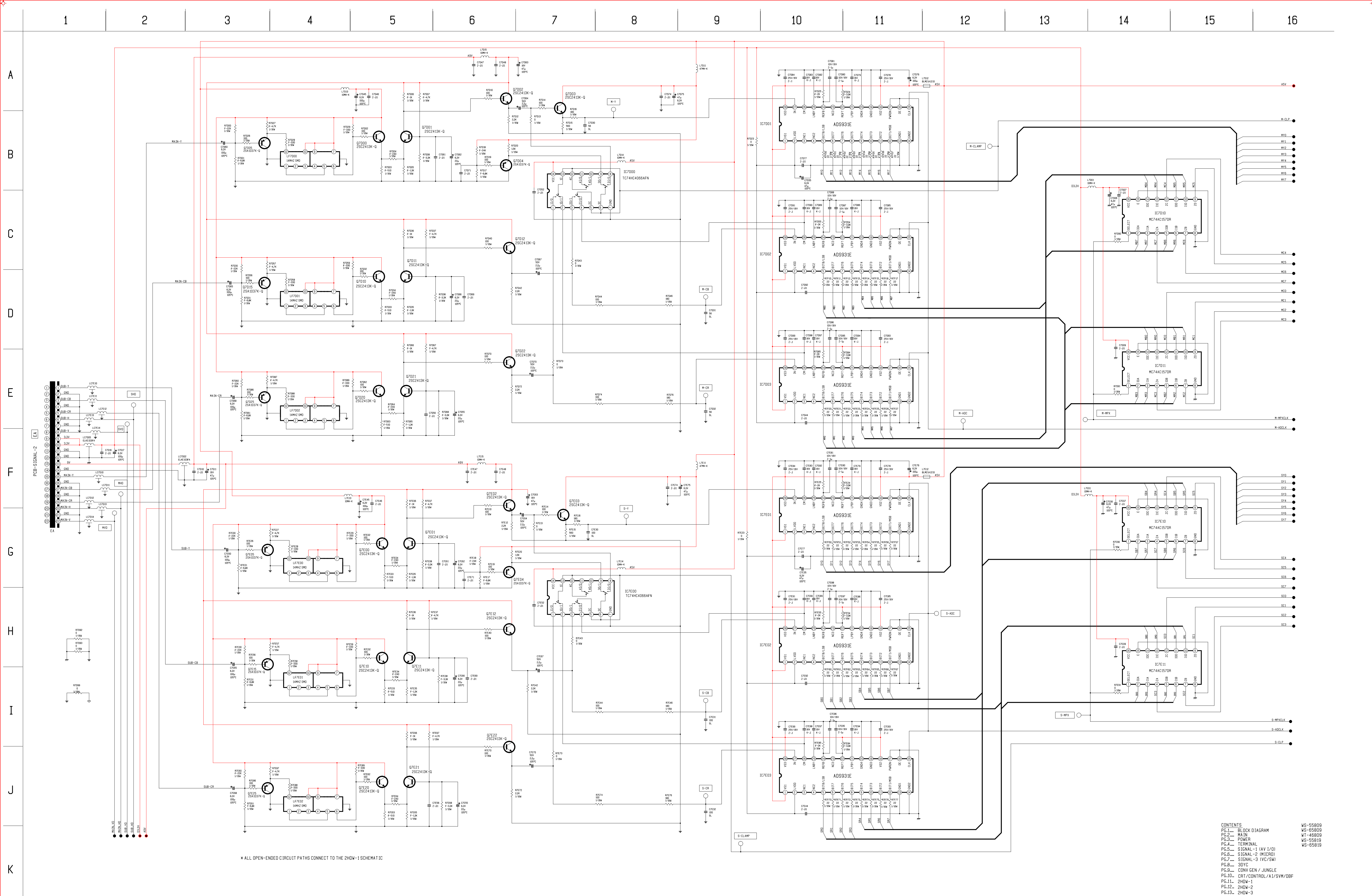
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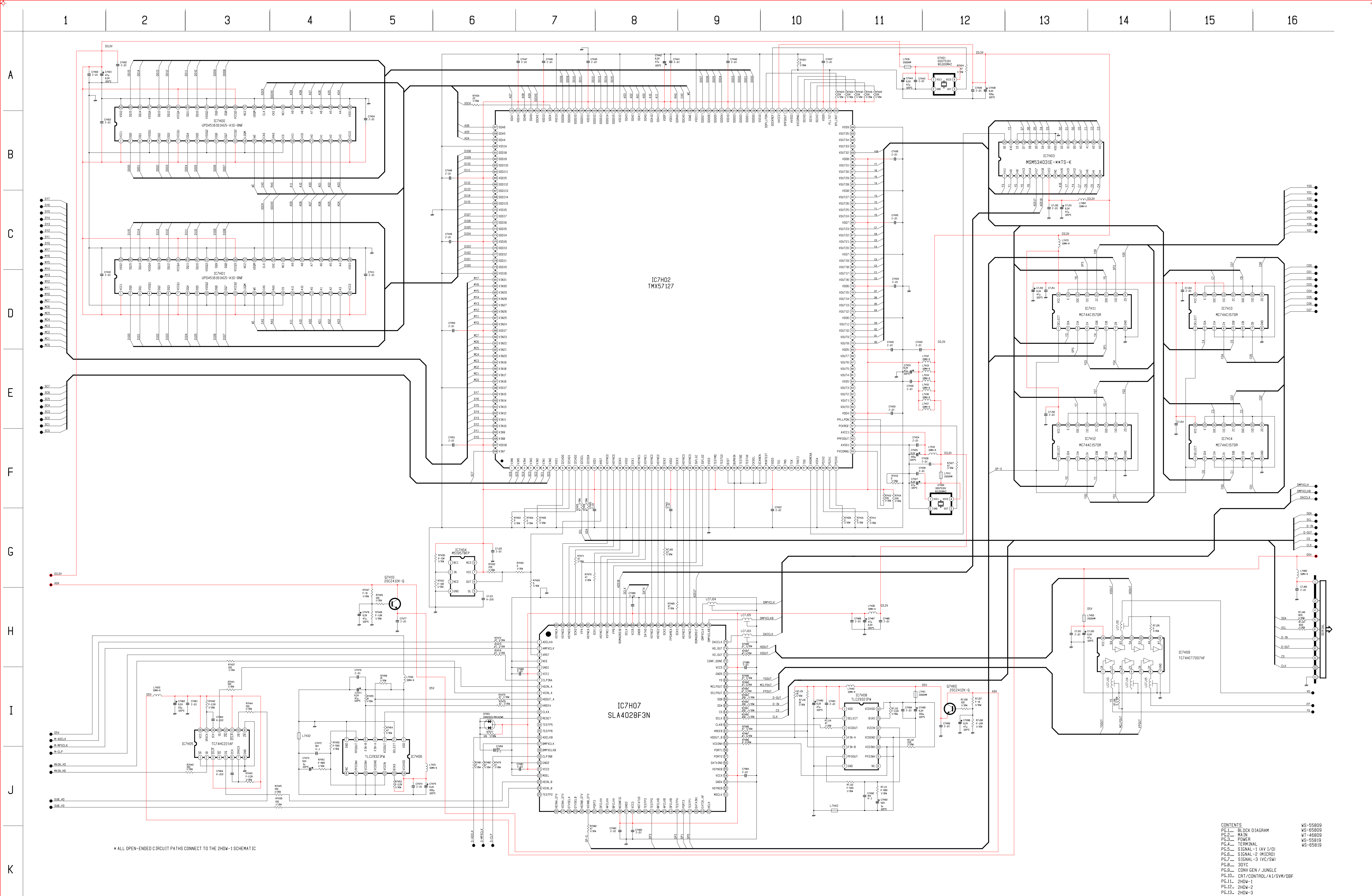
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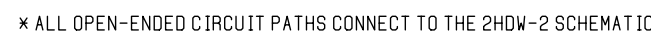
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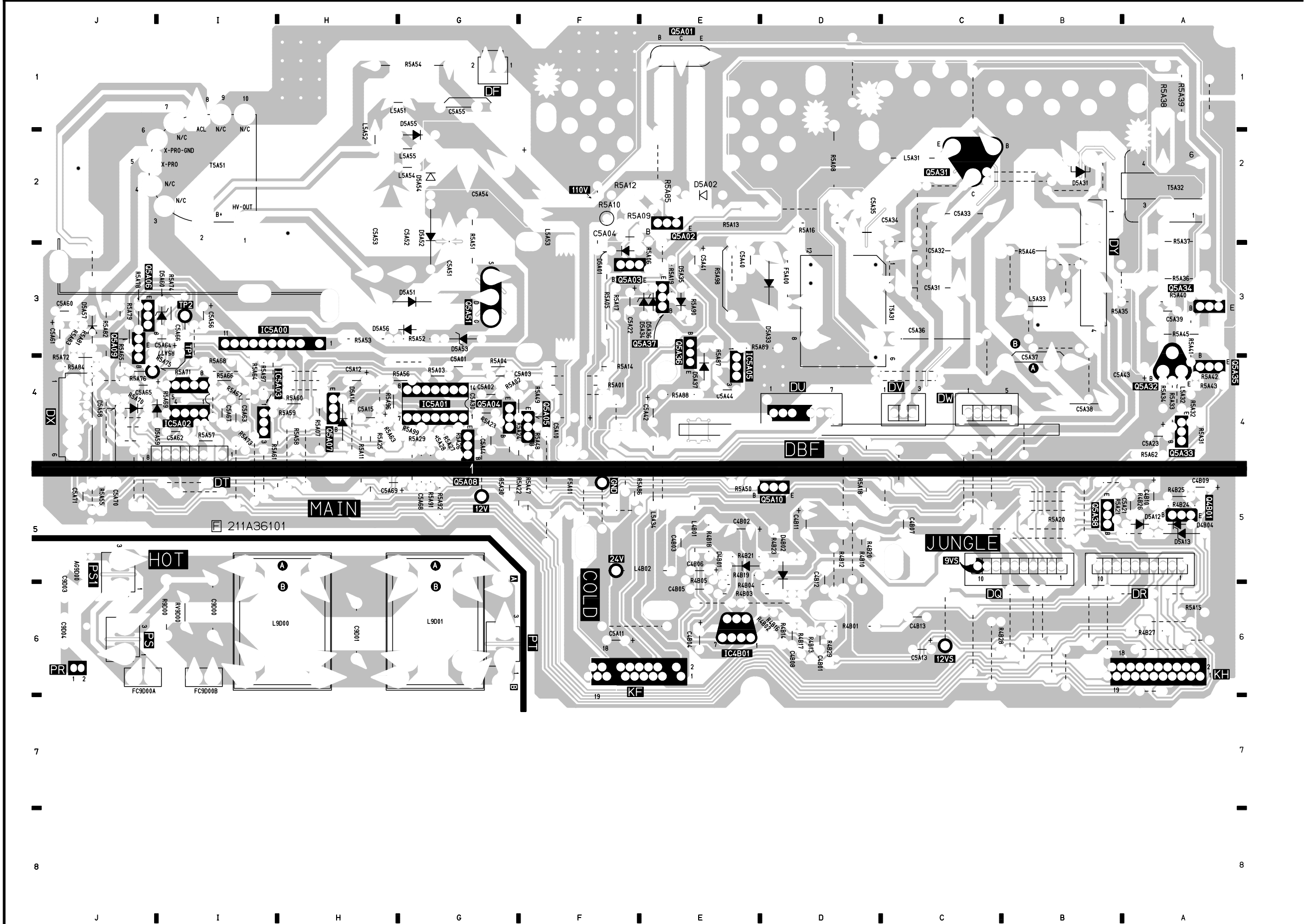
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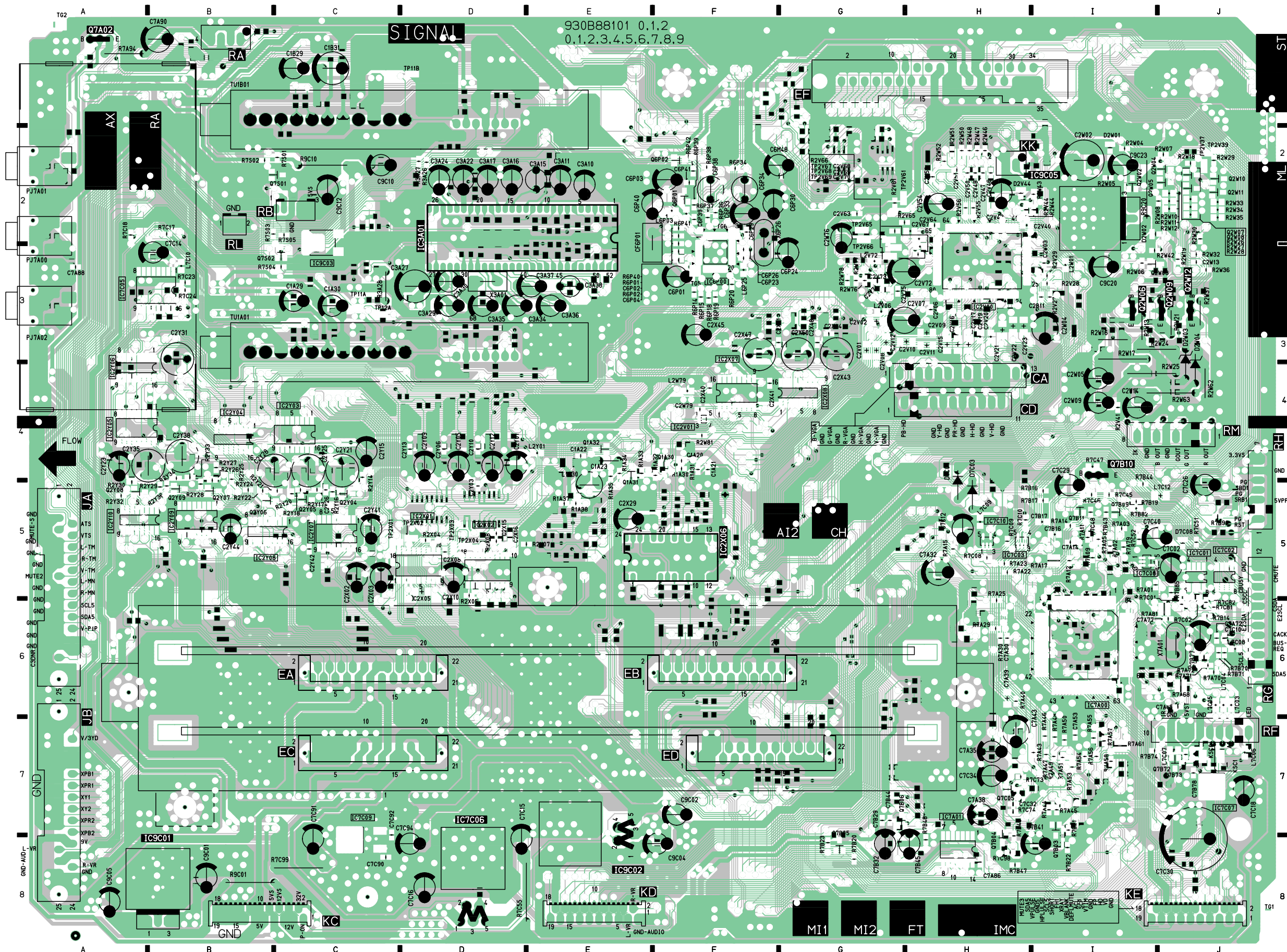


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WT-46809  
WS-55819  
WS-65819



| SYMBOL NO. | ADDRESS | SYMBOL NO. | ADDRESS |
|------------|---------|------------|---------|
| D4802      | D5      | Q5A08      | G4      |
| D4B01      | E5      | Q5A09      | J3      |
| D4B04      | A5      | Q5A10      | D5      |
| D5A01      | F3      | Q5A31      | C2      |
| D5A02      | E2      | Q5A32      | A4      |
| D5A12      | A5      | Q5A33      | A4      |
| D5A13      | A5      | Q5A34      | A3      |
| D5A14      | H4      | Q5A35      | A4      |
| D5A31      | B2      | Q5A36      | E3      |
| D5A33      | D3      | Q5A37      | E3      |
| D5A34      | E3      | Q5A38      | B5      |
| D5A35      | E3      | Q5A51      | G3      |
| D5A36      | E3      |            |         |
| D5A37      | E4      | RV9000     | I6      |
| D5A51      | G3      |            |         |
| D5A52      | G2      | T5A31      | C3      |
| D5A53      | G3      | T5A32      | A2      |
| D5A54      | G2      | T5A51      | I2      |
| D5A55      | G2      |            |         |
| D5A56      | G3      | TP1        | J4      |
| D5A57      | J3      | TP2        | I3      |
| D5A58      | J4      |            |         |
| D5A59      | J4      |            |         |
| D5A60      | I3      |            |         |
|            |         |            |         |
| F5A00      | D3      |            |         |
| F5A01      | F5      |            |         |
|            |         |            |         |
| FC9000A    | J6      |            |         |
| FC9000B    | I6      |            |         |
|            |         |            |         |
| IC4B01     | E6      |            |         |
| IC5A00     | I3      |            |         |
| IC5A01     | G4      |            |         |
| IC5A02     | I4      |            |         |
| IC5A03     | I4      |            |         |
| IC5A05     | E4      |            |         |
| IC5A05     | E4      |            |         |
|            |         |            |         |
| L4B02      | E5      |            |         |
| L5A31      | C2      |            |         |
| L5A32      | A4      |            |         |
| L5A33      | B3      |            |         |
| L5A34      | E5      |            |         |
| L5A51      | H1      |            |         |
| L5A52      | H1      |            |         |
| L5A54      | G2      |            |         |
| L5A55      | G2      |            |         |
| L5A58      | F2      |            |         |
| L9000      | H6      |            |         |
| L9001      | G6      |            |         |
|            | A5      |            |         |
| Q4B01      |         |            |         |
| Q5A01      | E1      |            |         |
| Q5A02      | E2      |            |         |
| Q5A03      | F3      |            |         |
| Q5A04      | G4      |            |         |
| Q5A05      | F4      |            |         |
| Q5A06      | J3      |            |         |
| Q5A07      | H4      |            |         |

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| SYMBOL NO. | ADDRESS | SYMBOL NO. | ADDRESS |
|------------|---------|------------|---------|
| QF6P01     | E2      | Q1A31      | E4      |
|            |         | Q1A32      | E4      |
| Q2W02      | I2      | Q2708      | A5      |
| Q2W03      | J3      | Q2W02      | I2      |
| Q2W04      | J3      | Q2W03      | I3      |
| Q7C03      | H5      | Q2W04      | I2      |
| Q7C04      | H4      | Q2W05      | I2      |
| Q7C08      | J5      | Q2W06      | I3      |
|            |         | Q2W07      | J2      |
| IC2V00     | H3      | Q2W08      | J2      |
| IC2V01     | F4      | Q2W09      | J3      |
| IC2X01     | D5      | Q2W10      | J2      |
| IC2X02     | D5      | Q2W11      | J2      |
| IC2X06     | F5      | Q2W12      | J3      |
| IC2X07     | F4      | Q2Y04      | C5      |
| IC2X08     | G4      | Q2Y05      | C5      |
| IC2Y03     | C4      | Q2Y09      | B5      |
| IC2Y04     | B4      | Q6P01      | F2      |
| IC2Y05     | A4      | Q6P02      | F2      |
| IC2Y06     | A4      | Q7A02      | A1      |
| IC2Y08     | B5      | Q7B03      | I7      |
| IC2Y09     | B5      | Q7B04      | H7      |
| IC2Y10     | A5      | Q7B05      | G8      |
| IC3A01     | D2      | Q7B06      | G7      |
| IC6P00     | F3      | Q7B09      | I5      |
| IC7A00     | I6      | Q7B10      | I4      |
| IC7A01     | H8      | Q7B11      | I5      |
| IC7C01     | J5      | Q7B41      | I7      |
| IC7C02     | J5      | Q7B72      | J7      |
| IC7C03     | H5      | Q7C05      | H7      |
| IC7C05     | A3      | Q7S01      | C2      |
| IC7C06     | D8      | Q7S02      | C3      |
| IC7C07     | J7      |            |         |
| IC7C08     | I5      | TP11A      | C3      |
| IC7C09     | C7      | TP11B      | D1      |
| IC7C10     | H5      | TP12A      | C3      |
| IC9C02     | E7      | TP2V37     | J2      |
| IC9C03     | C3      | TP2V39     | J2      |
| IC9C05     | H2      | TP2V61     | G2      |
|            |         | TP2V66     | G3      |
| L2V06      | G3      | TP2V67     | G2      |
| L2V72      | G3      | TP2V68     | G2      |
| L2W01      | I3      | TP2V69     | G2      |
| L2W79      | F4      | TP2X01     | C5      |
| L2Y01      | F4      | TP2X02     | D5      |
| L6P25      | E3      | TP2X03     | D5      |
| L7C04      | J6      |            |         |
| L7C05      | J6      | TU1A01     | B3      |
| L7C05      | J6      | TU1B01     | B1      |
| L7C06      | J7      |            |         |
| L7C07      | J7      |            |         |
| L7C08      | H5      | X3A01      | D3      |
| L7C09      | J6      | X6P26      | F2      |
| L7C10      | B3      | X7A01      | J6      |
| L7C12      | J4      |            |         |
|            |         |            |         |
| PJ7A00     | A2      |            |         |
| PJ7A01     | A2      |            |         |
|            |         |            |         |
| Q1A30      | F4      |            |         |



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